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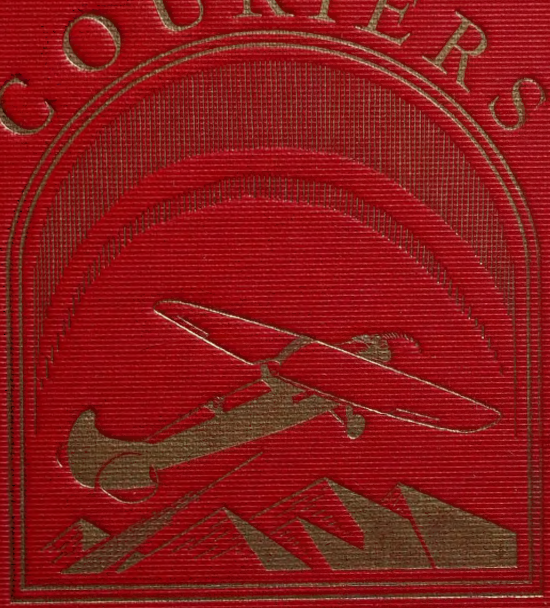
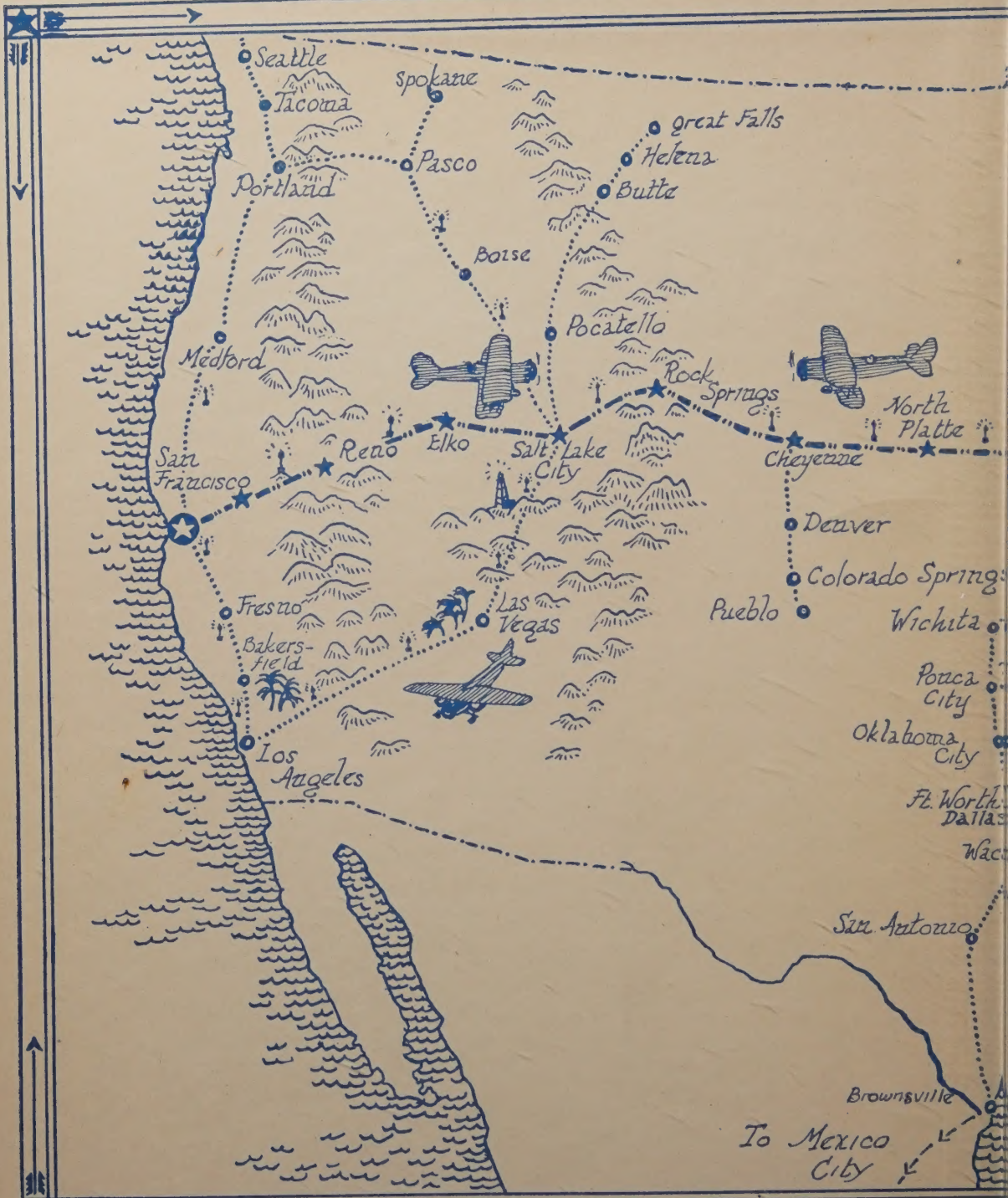


by

EDWARD SHENTON



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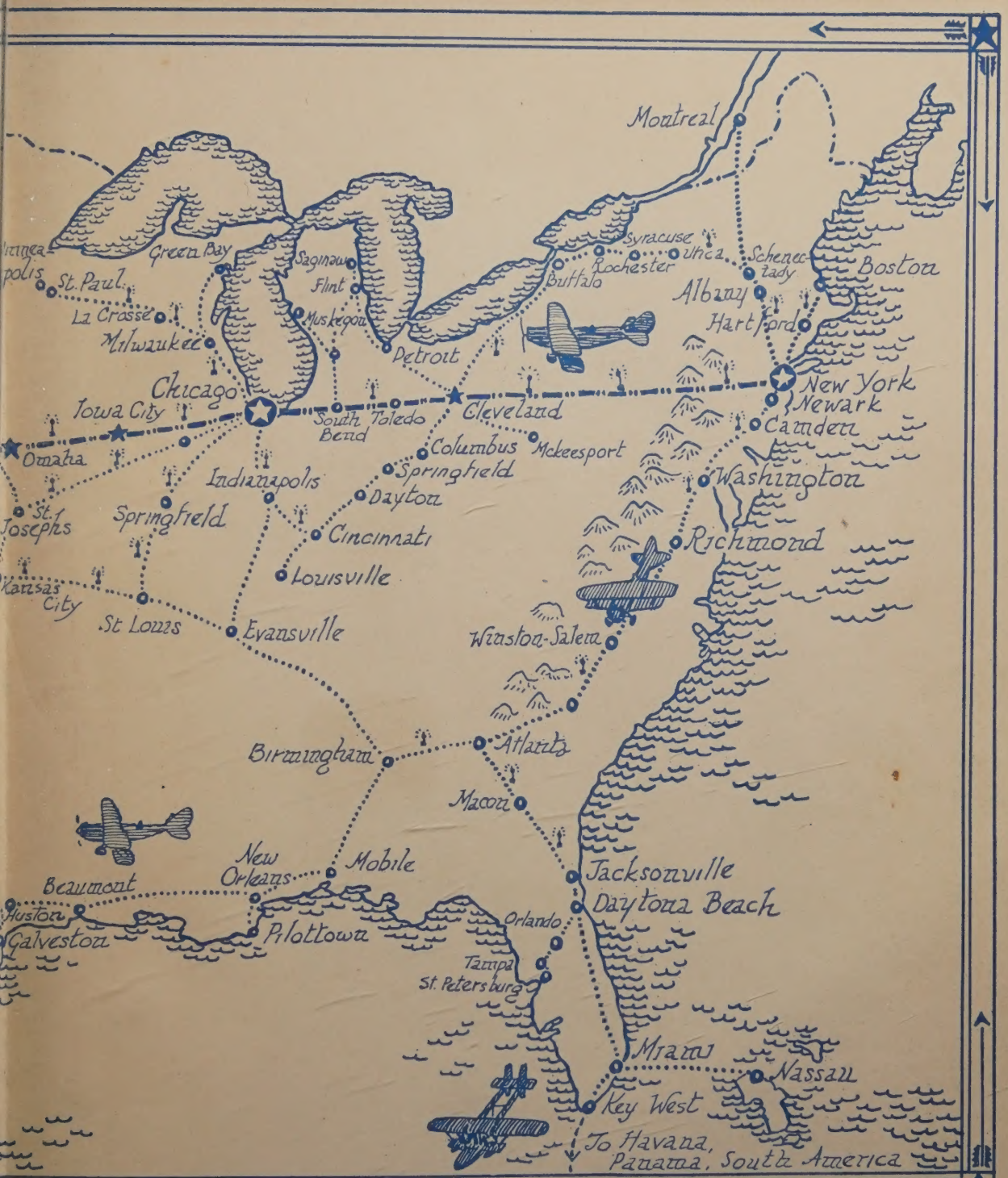

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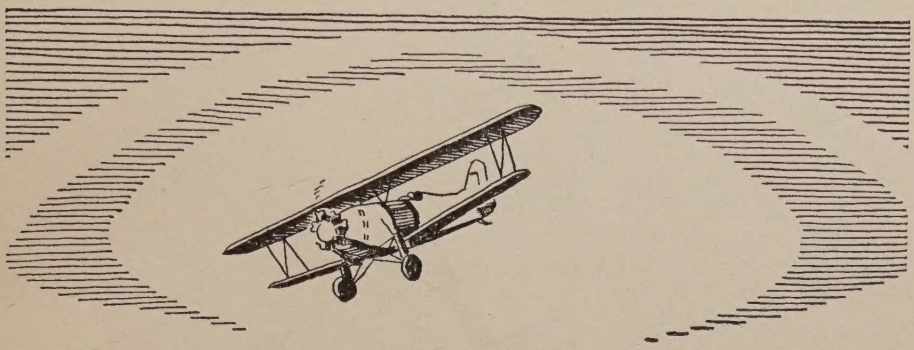

BY THE SAME AUTHOR

RIDERS
OF THE
WINDS

A MODERN PLANE OF THE AIR MAIL

By Edward Shenton

COURIERS OF THE CLOUDS

The Romance of the Air Mail

With Illustrations by the Author

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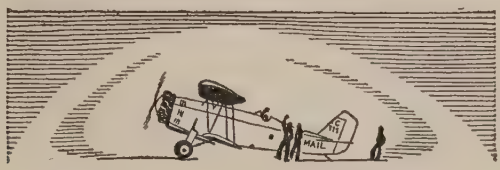
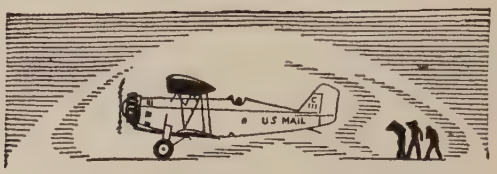
TO THE BOYS OF TODAY

WHO WILL BE THE PILOTS OF TOMORROW





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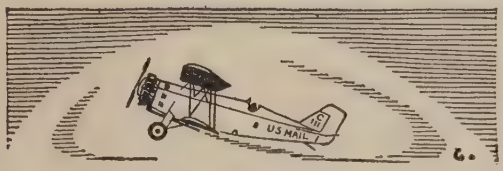
CONTENTS



PART ONE: THE AIR MAIL YESTERDAY 11

I. BEFORE THE AIRPLANE 13

II. THE AIRPLANE 25

III. THE AIR MAIL TAKES OFF! 34

IV. THE AIR MAIL GOES THROUGH! 45

V. THE AIR MAIL HEADS WESTWARD! 53

VI. THROUGH THE NIGHT 72

PART TWO: THE MEN WHO FLY THE MAIL 87

PART THREE: THE AIR MAIL TODAY 147

I. THE FIELD 149

II. THE FIELD OFFICE AND PILOTS' ROOM 157

III. THE WEATHER BUREAU 159

IV. THE PLANES 169

V. THE MAIL FLIES WEST 178

ILLUSTRATIONS

A MODERN PLANE OF THE AIR MAIL	FRONTISPIECE
	Facing Page
THE FRENCHMAN FIRED SEVERAL SHOTS	20
THE AIR MAIL WAS AWAY	36
THE POUCHES WERE SECURELY STOWED	38
A BURST OF COLD WIND, EDGED WITH HAIL AND RAIN STRUCK THE PLANE	48
TRAINING AN AIR MAIL PILOT	55
TAKING ON GAS AT AN EMERGENCY FIELD	59
TOO MANY PLANES WERE COMING DOWN IN FLAMES	60
HE STORMED OVER THE MOUNTAINS	66
SYSTEM OF LIGHTS ON MAIN FIELD	74
EASTWARD, OVER THE MOUNTAINS, ROARED THE MAIL PLANE	76
PILOT JOHNSON STARTS THE FOUR-DAY TEST	77
THE MAIL LANDS AT OMAHA	80
THE NIGHT MAIL READY TO DEPART	82
UP AND DOWN THE PLATEAU THE DH PLOWED	94
A MAIL PILOT DISCOVERS A WRECKED COMRADE	96
THE PLANE STRUCK	106
HE SAW THE STUBBY HULL OF A LIGHTSHIP	115

	Facing Page
MAIL PLANE WRECKED BY CYCLONE	118
EIELSON KNEW THE COUNTRY	121
THE 'CHUTE FUNCTIONED INSTANTANEOUSLY	129
MAIL PLANE WRECKED IN THE MOUNTAINS	139
THE FIELD WAS COMPOSED OF WATER	142
COLONEL CHARLES A. LINDBERGH OPENING THE MAIL ROUTE TO CENTRAL AMERICA	144
EASTERN TERMINAL OF THE AIR MAIL	153
LOADING THE MAIL	162
LOADING THE WESTBOUND MAIL PLANE AT HADLEY FIELD	164
PLANES ARE INSPECTED AND SERVICED AT THE END OF EACH FLIGHT	176
BANK OF FLOOD-LIGHTS	180
THE SOUTHERN MAIL PLANE TAKES OFF	184
THE NIGHT MAIL TAKES OFF	188
A THOUSAND FEET ABOVE THE EARTH	189
MAP OF AIR MAIL ROUTES	194–195

PART ONE

THE AIR MAIL YESTERDAY

BEFORE THE AIRPLANE

I

OVERHEAD, dropping out of the dark sky, comes the steady drone of a motor; among all the motionless stars, one star, white and tiny, rushes across the black space. It is a winter night, crisp and clear, but the thermometer is well below freezing and most people are comfortably at home. The early moon has sunk below the frozen rim of the world, the stars glitter with mid-winter brilliance, and the small star swings on its lonely course a half mile above the earth. The motor might be the harsh voice of some forlorn ghost wandering the cold heavens and crying its despair to the inattentive globe. But in the houses below, heads are momentarily raised and casual voices say: " There goes the air mail." Perhaps someone looks at his watch and remarks, " Right on time! " A boy, preparing his homework, pauses, lays down his pencil, his mind caught by the romantic image of that passing star. On the street, late pedestrians glance up into the night, seeking to

locate the hidden plane from the pulsing motor; catch a momentary glimpse of the light on the tail and shiver a little, thinking for an instant of the pilot huddled in the cockpit, deafened by the rushing wind and the crackling exhaust, sundering the deep, unstable rivers of lightless air at two miles a minute.

The noise of the motor dwindles rapidly; the flash of the tiny light is gone almost instantly. The brief consciousness of the plane's passing fades from the minds of the people below. The air mail has come and vanished along its trackless way. Only the boy sits, his eyes still lifted toward the frosted window, his pencil reluctant to take up again the sum of the figures written on the white paper. For him the nightly passage of the air mail is adventurous and romantic, as it is truly, and not one more extension of the business of living, as it is, also.

For out of the urge for adventure and business, has come the romantic reality of the air mail; just as these inseparable parts of man's desire produced the Phœnician galleys, the caravels of Spain, the Clipper Ships of New England, Fulton's steamboat, the black puffing monster Whistling Billy, and that silver giant of the skies, the Graf Zeppelin. The two longings have always gone hand in hand. Not every man had them both, but always there were the adventurers who wanted to find the Western Passage and so built their boats and set sail, and the merchants who saw in the boat a method by which they might send their iron to India and exchange it for spices and silk. And for hundreds of years there were the men who watched the swift flight of swallows, the slow soaring buzzards, the graceful ease of gulls, and tried to imagine a machine with which they could rise into the imponderable air and swoop

and glide and fly like the swallows and the gulls. Even that long ago, when travel on the earth was slow, laborious, uncertain, in stage-coaches and on horseback, and travel on the sea was dangerously at the mercy of the weather, when it took a week to make the trip from Boston to New York and three days from New York to Philadelphia and a month or two, or even three, from the Old World to the New, men in their talk discussed the possibility of conveying merchandise and letters by air. More than that, over sixty years ago, they actually tried.

II

In Europe another war was in progress. The vain, ill-advised Napoleon III, haunted by his delusions of grandeur and attempting to bring again to the French Empire the lost glories of his illustrious uncle, had picked a quarrel with a Germany just emerging into proud consciousness of its might. Intoxicated with the stirring " Blood and Iron " philosophy of Bismark, the marvelously armed and trained German divisions rolled their spiked-helmeted waves of young men across the frontiers of France.

The French had not yet recovered from the Napoleonic wars. Their government was torn with internal dissension, and the extravagance of their ruler had exhausted the already drained coffers. Individually the French are gallant soldiers. They responded to the call to arms. But personal bravery does not win wars. The regiments of Frenchmen went out with rifles and no bullets, cannons and no powder, officers who held rank by gift or influence and rations so uncertain and scanty that most of them lived by

raiding their own country as they passed. The result of the war was settled before the first shot was fired. The magnificently equipped German divisions decimated the French, while Napoleon from his carriage watched and wept as the standards of once proud regiments of a greater Napoleon were captured and their defenders scattered. The early days of September, 1870, saw Paris surrounded by the enemy and cut off from the rest of the nation. So tight was the German blockade that no messenger was able to get through the lines. It was then that the naturally resourceful French established what might be looked upon as the first regular attempts to carry mail by air. Of course it was not, in any sense, like the air mail we know today. It was a military necessity, a desperate effort of the besieged city to send to the thousands of Frenchmen who waited in heart-stricken anxiety, some word of the progress of events. The letters to be carried were reports and military documents.

It is difficult to realize how much courage and ingenuity was necessary to turn the idea into an actuality. The airplane was still a dream. Thirty years and more were to pass before the sensational three second flight of the Wrights at Kitty Hawk heralded a new epoch in man's long struggle to emulate the birds. The dirigible was also a distant accomplishment. There were only balloons to be used in this daring venture and these had to be built.

Fortunately in the besieged capital was a Frenchman known as " M. Nadar." He was an experienced aeronaut. His real name was Felix Tournochan and he was a journalist, cartoonist and photographer. He was a practical dreamer, an artist with vision, energy and courage. Ten years before he had become interested in

ballooning and had organized an Association to invent a heavier-than-air flying machine, really an airplane. He was one of the many men down the centuries who believed firmly in the possibility of travel by air, and the transportation of merchandise and mail. The Association had no money and the newspaper training of M. Nadar suggested a " stunt " which would attract public attention and raise money for experiments. The heavier-than-air machine still existed only in his brain, but balloons were quite common by that time and in France the tradition of flying came from the heroic exploits of the Montgolfier Brothers in hot air balloons almost a hundred years before.

The plan of M. Nadar was to build a balloon larger than any that had ever been built, carry passengers, interest capital and put his Association on a secure financial basis. So he designed and had constructed a balloon christened " The Giant." It was a monster. The bag held 200,000 cubic feet of gas, which is about one-fifth the size of the " Los Angeles." The basket was a two-story affair, made of wicker, with a cabin, a dining room and observation deck. It carried M. Nadar, two pilots and ten passengers. The first flight was relatively a failure, but the second was a stupendous adventure, nearly killing all on board and ending in the complete wreck of " The Giant." But the craft covered over 400 miles before its unfortunate end and M. Nadar gained the experience that ten years later was to be so valuable to beleaguered Paris.

The military government of the city put M. Nadar in charge of building the balloons that were to make the venturesome journeys above the German army to other parts of France and give the despairing country news of the siege. Two factories were estab-

lished and work begun. Material was limited and the bags had to be made from cotton cloth covered with linseed oil and oxide of lead to keep the illuminating gas with which they were filled from escaping. The balloons were rather small and could lift only two men. When the first one was finished the city was in a turmoil of excitement. On the twenty-third of September a favorable wind blew from the east. The dreary autumn rains had ceased and over Paris was a bright sky, intensely blue and clear. Preparations were rushed for the flight of what was really the first air mail. In the basket was 500 pounds of letters, mostly military despatches and documents. The continuous rumble of the German guns was momentarily forgotten, as the two young aeronauts stowed their meager supplies, took the letters and climbed into the basket. Amid breathless silence M. Nadar gave the signal to release the balloon. It arose proudly into the air and the accompanying cheer drowned the firing. On the walls of Paris the soldiers turned their faces upward to watch the balloon rising above the old gray stone houses, the millions of chimney-pots. The hopes of Paris were being carried in that frail machine. In amazement the Prussians stared at the balloon and made half-hearted attempts to bring it down with musket fire as it ascended rapidly, blew toward the west and gradually vanished.

So well did M. Nadar and his assistants work that a balloon left Paris almost every day and carried messages to other parts of the country. M. Nadar himself had one of the most thrilling adventures of the entire two months that the balloon air mail operated.

He had left Paris in one of his balloons and landed safely de-

livering the messages. Then he conceived the daring project of reëntering Paris by balloon. Nothing gives quite so clearly a picture of the man's courage and intrepidity as this scheme.

The operation of a balloon is entirely dependent upon air currents. The pilot can rise by throwing out ballast, or descend by opening the valve of the bag and allowing gas to escape, but outside of these simple maneuvers he is almost entirely a plaything of the winds.

M. Nadar planned to fly from Tours to Paris and carry Government despatches of the most vital importance. He refused to allow anyone to accompany him, so dangerous was the mission. It is hard to imagine a more difficult feat. The distance to be traveled was about one hundred thirty miles. M. Nadar had to find favorable air currents that would carry him not only that far but bring him over a relatively tiny area, circled by the enemy guns, where he must descend.

Long before daylight eager workers were inflating his balloon and at six o'clock M. Nadar stepped into the basket, the anchoring ropes were cast off and the fragile contrivance rose into the brilliant sunlight of the upper air. At first the direction of the wind was wrong and the audacious pilot continued to empty the sand ballast until the balloon had risen almost a mile. There, far above the world still dim with the night shadows, he entered a current that swept toward Paris. He was elated. The day brightened and below him he could distinguish trees and fields, the red-roofed farmhouses, and white stone buildings. On his right was the thin shimmering thread of the Loire, winding in lazy curves through the beautiful countryside, russet and gold in the rich fullness of

THE FRENCHMAN FIRED SEVERAL SHOTS

autumn. The towers of old chateaux rose above the maze of foliage. The wind continued to blow toward the northeast and presently the solitary voyager saw the church spires at Vendome, and the minute figures of people rushing into the streets to peer up at him. By nine o'clock he had covered half the distance but he had been compelled to rise higher and higher to keep in the favoring air stream. It was bitterly cold and he huddled in the basket seeking protection behind its wicker walls. At eleven o'clock, having risen to almost two miles, he saw Paris, ringed by the German armies, below him and releasing a little gas began to descend slowly, trying to estimate the drift of his balloon and the rate of descent so that he would not be carried beyond the walls of the city and be killed or taken prisoner by the Prussians. It was the crucial period of that hazardous venture. Lower he dropped,

and lower until he could see distinctly the swarms of people gathered to watch him.

Then, just as he had decided that the angle of his descent would bring him safely into the city, to his amazement, another balloon appeared suddenly, drifting toward him. M. Nadar took out a small French flag and signaled the occupant of the other basket. With relief he saw the other aeronaut wave a similar flag. The two balloons, moving on the same air current drifted closer together. Then the pilot of the strange balloon raised a German flag and leaning over the edge of the basket fired at M. Nadar with a pistol. The shot missed and the Frenchman, drawing his own weapon, fired several shots at his opponent. The German promptly pulled the check valve and drifted back to the Prussian lines while M. Nadar continued his descent and landed safely in Paris.

There were many more flights of these early carriers of mail and messages, before Paris capitulated to the German might, and all of them were marked by heroism in the face of great danger.

Perhaps it is an exaggeration to attempt to relate these military exploits to our air mail system of today, but, certainly, the traditions established by these pioneer carriers of mail are the same to which the pilots of the present air mail respond. And the planes that flew the first mail routes in the United States were military ships, with army fliers at the controls.

III

Exploration and commerce almost always travel the same paths together. The adventurer and the merchant have penetrated the

mysterious new parts of the world within hailing distance of one another. Usually the pioneer is half-adventurer, half-merchant. When the first man lying in the warm sun, comfortable with feasting, watched lazily the soaring eagle and conceived the longing to emulate its unhampered flight, the pure adventurer's joy at the idea of being able to rise above the plodding earth-ways, was followed almost at once by the merchant desire to utilize these wings for some use; to carry himself more rapidly from one place to another; to transport his possessions more easily; to find other people with commodities he did not have and barter his bronze knives for their silk garments, or gold ornaments.

How often the pioneer toiling up the mountain pass, hacking his way through the forest, daring the passage of turbulent rivers must have sighed " If I could fly," and how often must the settler, separated from his fellow man by days of arduous travel on horseback or by stage coach, have pondered: " If there were flying-machines in a few hours I would receive news of my friends and could send them news of myself."

So men continued to dream of flying, and the dream was attended with the wish of utilizing that flying for practical purposes. It kept cropping out more and more frequently.

As early as 1822 the Editor of *Freeman's Journal* published at Norristown, Pennsylvania, recommended that the Postmaster-General consider the use of an ingenious flying machine invented by James Bennett for the transporting of mail through the air. The only difficulty was that the airplane would not fly.

Twenty years later R. O. Davidson of St. Louis petitioned Congress for an appropriation of $2,000 to test an experimental plane

to be used in carrying mail. He claimed that the mail could be flown at the rate of a hundred miles an hour. Less than a century was to see his predictions exceeded by twenty additional miles. The Senate rejected his petition as impractical.

About the same time that the French balloons were rising successfully over the German lines and furnishing the only communication between the city and the world, other men in England were becoming enthusiastic over the possibilities of a balloon mail system. *The Manchester Guardian*—one of the first newspapers to take an interest in aviation—built a balloon. It was launched with 8,000 letters protected by rubber bags. The plan seems to be rather a singular one as the balloon apparently was sent up without a pilot and left to drift at the mercy of the winds. Along with the mail was a message directing anyone who found the balloon after it had landed to take the mail to the nearest postmaster. There was a reward of $200.00 to the finder. The whole scheme seems to be without reason or logic, but from the evidence, apparently took place, although the record does not give any word of its success or failure.

The impressive but fragile dirigibles of Count Zeppelin had scarely risen into the air above Lake Constance when hundreds of people all over the world began to say, " There! These great craft will be able to carry passengers and merchandise and mail, swifter and more directly than railroads or steamboats." But the dirigibles were wrecked by storms; their motors were not reliable. One by one they ended their glories in twisted heaps of metal and cloth.

All these experiments, sensible and foolish, were indications of the wide-spread interest in flying machines and a practical use for

them. In France, England and America principally, dozens of men were musing over the same ideas, working in the same direction, building planes that did not fly, putting clumsy motors in frail dirigibles, launching themselves in gliders of amazing design, but adding steadily to the knowledge of the air and year by year approaching the inevitable successful flying machine.

THE AIRPLANE

I

TO appreciate fully the air mail as it is today, it is necessary to know something of the years of patient experiment, the long, careful research, the devotion and heroism of the men who brought the airplane to the place in its development where it was capable of being flown with a fair margin of safety; not safety to the pilot, for there always have been and always will be plenty of men who are willing to wager their skill and daring against their lives. No project, however desperate, has ever been conceived that there has not been some audacious chap willing to " take a chance," and the records of aviation are filled with the glorious names of men who dared the treacherous, unsubstantial ocean of the heavens in machines so frail and unsafe that people today gaze at them with amazement.

But this kind of individual daring does not result directly in any

such tremendous achievement as the air mail is to-day. Every great commercial project must be a continuous function, going on regularly, day in and day out, serving the needs of nations, becoming one of their accepted habits, linking and binding countries or states into closer and closer relations. The caravels of Columbus were romantic and inspiring ships, symbols of the greatness of spirit of the men who trimmed their sails, steered their uncharted course across unknown seas to new worlds. We look back upon them with a warm interest, with affection and a romantic longing for what seems to have been a time richer in opportunity, more adventurous; a time when hearts beat with a higher courage and the lives of men contained a grandeur of purpose and a fulfillment beyond anything possible in our organized and closely-knit world.

The caravel, slow, clumsy, unseaworthy, gave place to newer forms of vessels as the merchant, following upon the heels of the adventurer, wanted to arrive quicker in the Americas, collect greater cargoes of its wealth, transport new settlers in larger numbers, and send and receive news and instructions in fewer days. The square-rigged ship was devised in answer to these urges, then the swift packet and clipper and finally the great ocean liners of today, journeying regularly through storm and sun across the ocean that the sailors of Columbus gazed upon with awe.

This necessity is at the basis of the present-day air mail system and from its achievement arises a story as romantic, as full of high-hearted courage as any in the history of mankind.

Ask the pilot of the air mail as he steps, cramped with cold from the cockpit of his plane on the landing field at Bellefonte, Pennsylvania, high amid the Allegheny mountains, the most dangerous fly-

ing district in the world. He'll stare at you for a moment and then say: "Yeah?"

The chances are, though, the trip he has just completed from Hadley Field has been one continuous struggle, his skill and courage pitted directly against an almost certain death. But that does not concern him directly; his job is to get through *safely,* to deliver the mail intact and on time at its destination; just as the job of the captain of the Leviathan is to bring his ship, passengers, crew and cargo safely and rapidly into Cherbourg or New York.

Speed and safety!

These are the two aims of the air mail today and to achieve them men have labored upon the airplane for thirty years until its engine is a miracle of dependable machinery, its instruments are precise and accurate, its wings strong, its speed and stability such that only a storm of unusual intensity drives it down to earth.

Of all these factors that go into the making of the airplane the sturdy and beautiful machine we see flying overhead, the two most important were the product of two American brothers. Without them the airplane would still be a dream. They are, a gasoline engine whose weight is somewhere within a reasonable ratio to its horsepower—the motor in the first Wright machine weighed about seventeen pounds per horsepower—and a method by which a plane may be laterally balanced, that is, a means to keep the plane from tilting sidewise when flying or turning. The Wright Brothers were successful in building a gasoline engine light enough and with sufficient power to lift a plane; and to discover a method of warping the tips of the wings that would keep the airplane from rolling over in the air.

The moment these two objects were accomplished the future of flying was certain, and the air mail only a matter of time. It is difficult for us to realize why it took so long, but in those pioneer days for every man with sufficient vision to believe in flying there were fifty who were indifferent or who actively condemned the " new-fangled machines."

For ten years the Wright Brothers, Glenn Curtiss and other brilliant exponents of aviation worked with little encouragement and much criticism. Planes were built at great cost only to crash, blaze fiercely for a moment and subside into a blacked heap of metal and wire. Pilots went aloft, found their planes spinning down and were helpless to stop them. Some died, some were crippled for life. Their knowledge of the behavior of planes, of air-currents, of pressures, of strains, was scarcely anything. Their engines failed at crucial moments, wings buckled, ships went into spins for no known reason and there wasn't a man flying who knew absolutely how to get them out. The very theory of flying was completely wrong. In those days pilots said: " Fly low and slow." They did, and more and more of them had to be dug out of the twisted heaps of canvas and wood.

No wonder the merchants stood aside, the believers in an air mail lost confidence, as they watched these adventurers wrecking their planes and losing their lives.

The project of the air mail could not be built upon such uncertainties. It must be swift and *safe!* There must be at least ninety chances for arrival out of every hundred starts and even that is not a satisfactory percentage.

So the adventurers went on building and rebuilding, engineers

fussed over the problem of a reliable motor, wings of new shapes and strength were gradually evolved, but the majority of people were apathetic and progress was slow. It took the war to bring about the air mail!

II

It is difficult for men urged by a dream to be patient, and wait upon the perfection of their machines. The development of the airplane was amazing in its rapidity but it was still too slow for the uses which awaited on every side. Sporadic attempts began to be made. "These machines do fly," men said. "What can they do? Can they carry mail?"

On September 23, 1911—forty-one years to a day from that moment when the first balloon with its package of letters and documents rose above Paris—the first sanctioned air mail flew in the United States. Among that group of men who joyously risked their necks in the effort to prove the merits of airplanes was Earle L. Ovington. He piloted a Bleroit monoplane similar in design to the one that had first flown over the English Channel. It was a frail contraption, with a Gnome rotary motor and bore the proud name of "Queen." During the air meet held for a week on Long Island, Ovington was appointed an official mail carrier of the U. S. Government. He flew a fixed route and each day his plane like a thick-winged wasp droned over the ruddy autumn tree tops carrying mail from the flying field post-office to Mineola where the pouches were dropped for the postal clerks to carry to the regular post-office. The successful completion of the week of mail flying

was due entirely to the skill of the pilot. He transported 32,415 post-cards, 3,993 letters and 1,062 circulars, an astonishing achievement.

Pilot Ovington's work aroused great popular interest and added to the enthusiasm of the men who were seeking to establish, even then, a system of air mail transportation. Everyone was convinced that within a year ships would be traveling the sky daily, bringing the parts of the country into closer communication; everyone, except Congress. They refused to appropriate any money, and these first gallant efforts died away, and were shortly forgotten as the red wave of war gathered above Europe and crashed down drenching the world in its bloody spray.

III

Before August, 1914, the number of airplanes in the world was ridiculously small. Looking back upon those fifteen years, it is difficult to realize that at the declaration of war Great Britain possessed about one hundred, while France, Russia and Germany each owned possibly three times as many. They were slow, frail machines, with the pilots sitting precariously on little seats only partially protected, powered with engines that stopped as often as they ran, wings incapable of standing the strain of any abrupt maneuvers, and a tendency to do new and startling stunts to the amazement and usually the complete destruction of their pilots. But the great days of the adventurers had arrived. Up they went, sputtering and bucking, French and English and German aviators, flying with

the reckless fervor born of the war. At first they did not engage in combat work, they were scouts, and the information they obtained was so great that every nation realized their potential value.

The few air craft factories were commandeered; anyone who had any knowledge of aviation was pressed into the work. Under the goad of war necessity, the design and construction of airplanes developed with astounding rapidity. The well-known automobile makers began to build engines of greater power, strength and dependability.

Three types of airplanes were devised; the combat ship, speedy, strong, able to withstand power dives, loops, Immelmann turns and all the rapidly accumulating technique of air-fighting; the reconnaissance plane, slower, but carrying two men, machine guns, photographic equipment and a few light bombs; the bombers proper, huge two-engined craft with crews of three to five men, an extended cruising radius, and sufficient power to lift a ton of bombs. These three types, years later, were to be fused into the perfect air mail plane.

These amazing happenings were going on in Europe but in America aviation was at a standstill, except for a small group in the Army and Navy, and scattered individual enthusiasts over the nation. The air mail seemed a dream, decades away. No one realized how rapidly it was approaching reality.

America entered the war. There were scarcely a hundred planes fit to fly. The aviation personnel was limited, hampered by politics, lack of money, red-tape, stupidity and plain ignorance. At once a cry went up: " We *must* have airplanes! " The Government called upon an industry that was scarcely beyond the experimental

stage, upon men of undoubted genius, who for years had struggled along with no encouragement or assistance.

They attempted to overcome the neglect of years in a few months. Vast sums of money were spent. Planes were built, cast aside and new ones designed. Out of the hurly-burly eventually came the airplane officially designated as the JN–4, but called by all who flew it the " Jenny." And when the " Jenny " was built the air mail had found its first wings.

IV

The " Jenny " is remembered with affection by war time pilots, as one recalls a first bicycle, or the catboat in which one learned to sail, or the automobiles of twenty-five years ago. In reality it was nothing more than a good training-plane. It was slow, heavy, and under-powered. There were two cockpits, and double controls for instruction purposes. As there were no motors in America, they had to import models from abroad and build from foreign designs. But the " Jenny " could be flown and there were thousands of young fellows eager to wear the flier's double wings and seek immortal glory among the clouds. Over Kelly Field and the other training bases, the flocks of JN–4's cut figure eights, banked, zoomed and wheeled while the boys who were later to form the nucleus of the air mail learned to pull out of spins, to fly dangerously close in military formation and land without tearing the undercarriage from the fuselage. They were glorious days; the adventurers swarmed across the skies and the merchants were obscured by the brood of the eagle, intent upon the hunt.

Not entirely obscured, however.

Even then, during those clanging months of war, there were men who went ahead, slowly, patiently, making their plans for the time when destruction would no longer occupy the world. In Washington there were in the Postal Service of the Government, a group who had been working persistently to realize their dream of transporting mail by air. Postmaster-General A. S. Burleson and Assistant Postmaster Otto Praeger were two who believed implicitly in the possibility of the air mail. They were too impatient to await the end of the war before attempting to realize the project. They secured the coöperation of the U. S. Signal Corps and the promise of planes and Army pilots. Plans were rushed ahead and scarcely had the blossoms fallen from the cherry trees along the Potomac when the air mail was ready to try its wings.

III

THE AIR MAIL TAKES OFF!

I

IN the center of the flying field at Potomac Park in Washington a solitary plane, like a resting bird, stood with its blunt nose pointing north. On the edges of the field other planes, an escort of Army ships, waited to rise into the blue upper air and honor the first fledgling of the air mail.

The morning was bright and clear, a May morning with trees in leaf and patches of early flowers glowing across the countryside. A brisk wind blew out of the northwest. Lumps of cloud drifted slowly over the distant horizon. Flying weather! A gala day for the birth of the air mail.

On the field the highest dignitaries of the Army and Navy, members of the Cabinet, Senators, watched the activity about the plane and, the war for a moment forgotten, discussed eagerly the chances for the success of the long-disputed project. President Wilson, the burden of leading a nation in battle temporarily put aside, with

Mrs. Wilson arrived to witness the first flight. Postmaster-General Albert Burleson and his wife awaited anxiously the departure of this fragile machine which represented so many months of argument with an indifferent Congress, disputes, bickering, delays, and savage opposition from people who believed that the air mail was a futile, foolhardy impossibility.

The hands on the clock crawled slowly toward eleven. Activity increased about the plane carrying so many hopes, representing the unselfish energy of a few men of vision. More and more spectators gathered on the edge of the field. Presently the four mail pouches were brought out and stowed in the forward cockpit of the plane. The pilot climbed into the ship and slid down into his cockpit, only his shoulders and helmeted head projecting over the rim. Bouquets of flowers from the President and Postmaster-General were handed to the aviator. A mechanic seized the propeller and swung it. The motor choked, sputtered and stopped. The propeller was turned several times to suck gas into the cold cylinders. Again the mechanic jerked upon the thin blade. Nothing happened. Mechanics hurriedly inspected the engine. There was no trouble apparent. The crowd began to stir uneasily. Officials turned worried faces toward the inert plane. Another mechanic seized the propeller and swung it viciously, heedless of the danger of an unexpected back-fire. The motor refused to start. Suddenly a mechanic shouted:

" The gas tank's empty! "

It was an embarrassing moment, but everyone breathed easier to know there was no mechanical trouble with the motor. Men scurried over the field seeking gasoline. There wasn't a five gallon can

THE AIR MAIL WAS AWAY

on the place. As a last resort the tanks of the escort planes were drained and poured into the mail plane.

" Contact," shouted the mechanic.

" Contact," repeated the pilot.

The motor roared into life and the bright arc of the propeller glittered like a thin wheel of metal in the sunlight. Gradually its speed increased until the back wash tore up the young grass and shot a miniature tornado of dust from the rear of the machine. Chocks were jerked from under the wheels; the plane lurched, hesitated, rolled forward, gathering speed with every yard of ground covered. The tail came up and suddenly the wheels lifted from the earth. Steadily the plane climbed into the clear morning, flattened out and headed toward Baltimore. The air mail was away;

sixteen minutes late, to be sure, but that was quickly forgotten in the excitement.

A few people departed but many remained to receive the report of the plane's arrival at Baltimore, thirty-five miles away. It was not to stop there. Its passage was to be reported by telephone to Potomac Field. Minutes passed and no call came. When a half hour had gone everyone began to worry. The plane was fifteen minutes overdue. What had happened? Had there been an accident? Was the plane down in some patch of country where there was no telephone handy? It seemed impossible. The opponents of the air mail shook their heads and smiled. This was just what they had been saying. Then a call came and it was learned that the pilot had landed twenty-five miles *south* of Washington and broken the propeller. There was a general sigh of relief. The pilot and mail were safe, but no one could understand how the plane could have been flown in a direction exactly opposite to its correct course.

Later it was found the compass had failed and the pilot, becoming bewildered over country strange to him, lost his way completely, and in landing to find out where he was, struck a soft piece of ground, the plane nosed over and broke the propeller.

It was an ignominious beginning for the air mail, but better fortune was attending the other planes.

II

To us today, accustomed to daily service to all parts of the country, the first air mail seems a very slight undertaking. The

THE POUCHES WERE SECURELY STOWED

route was from Washington to New York with an intermediate stop at Philadelphia. As planned, there were to be four planes; one flying from New York and connecting with another at Philadelphia, which would carry the mail on to Washington. North bound the plane from Washington transferred its mail bags to the plane at Philadelphia which took them on to New York. Each plane traveled about ninety miles.

Nor were the desires of the Postal Service too ambitious. One through trip each way, every day except Sunday, was the schedule. Only fifty per cent. perfection was expected, which meant that of twenty-four possible trips during a month, only twelve were anticipated as successful. During the months of December, January and February, it was planned to discontinue the mail altogether.

Twenty-four cents an ounce was charged for mail. This included special delivery of the letter at its destination.

III

The misfortunes attending the departure of the first plane from Washington were forgotten in the achievements of the other three planes on that sunny 15th day of May, 1918.

While mechanics were frantically searching for gas to fill the dry tanks of the plane on Potomac Park field, at Belmont Park, the race grounds outside of New York, a crowd of three or four hundred people watched the preparations for the start of the first south bound ship. Speeches were being made as 11: 30, the hour of departure, drew near. In his plane Lieutenant Torrey H. Webb waited impatiently for the moment when he could lift his plane into the air. His head, in a bulky helmet such as is worn by motor-cycle racers, was turned toward the temporary stand where the speaker eulogized the infant air mail. The pouches were securely stowed in the forward cockpit, the 150 horsepower Hispano motor ticked over slowly. Lieutenant Webb wiggled the ailerons nervously, glanced at the instrument board: oil pressure O. K., motor warm enough, gas tank full;—he moved the rubber-bar, watching the square rudder swing from side to side; he shoved the stick forward and the elevating planes lifted. Eleven twenty-nine! The schedule said take-off at 11: 30. Lieutenant Webb was an Army aviator. Orders were orders. The speaker was far from the end of his speech. Eleven-thirty! Lieutenant Webb leaned from the cockpit and kissed his wife. He shoved the gas throttle open and

the howling blast of the exhaust drowned the voice of the man on the platform. He waved " chocks away." Number 382 leaped forward, pulled off in a steep climb, roared up into the azure distance, climbing steadily up and up a blue, unseen incline. At a thousand feet he leveled the plane and circled the field twice. Then he banked sharply, headed south and in ten minutes was lost from view. Once on the course Lieutenant Webb settled himself for the ninety mile flight. The motor turned over smoothly and its steady roar shut him away from all the noises on the earth below. To his delight he struck a tail wind and it added almost twenty miles an hour to his speed. His air speed showed a little better than 85 mph. but actually he was traveling at better than a hundred.

New York dropped back into the haze. He picked out the double tracks of the Pennsylvania railroad from the intricate maze of rails about Newark and followed them southward. Little towns passed beneath him. Motorists stopped their cars to gaze aloft.

" There goes a plane! "

" That must be the air mail! "

" The first mail plane, sure enough."

To the right he saw the square Gothic tower of Princeton University, and a glint of Carnegie Lake through the thickening foliage of the trees. Ahead a patch of dun-colored smoke marked Trenton. Lieutenant Webb was elated. Riding a tail wind with the one hundred forty-four pounds of the first mail. By midday he was over the New Jersey capital and could distinguish the dome of the State House like a soft gray bubble rising over the flat roofs of the town. The Delaware River curled out from the hazy dis-

tance, turned in a wide sweep and followed the direction of his flight. Now the country was greener, soft blue rolling hills, farm land still ruddy from the plow, dark bands of macadam road and on his left the glittering river. In a few minutes he had reached the suburbs of Philadelphia and came down in a long easy glide, watching for the landing field at Bustleton. Presently he saw it with Lieutenant J. C. Edgerton's relay plane waiting to take over the mail and begin its part of the journey. He crossed the field, banked in a wide descending turn and heading into the wind touched the ground, rolled a few hundred feet and stopped.

Instantly the mail pouches were snatched from the plane and packed into Lieutenant Edgerton's. Six minutes from the time the wheels of Lieutenant Webb's plane struck the ground, the relay plane was in flight toward Washington.

There were to be no more mishaps during the day. Lieutenant Edgerton reached Washington safely at 2: 30 in the afternoon and the mail was delivered before nightfall.

Lieutenant Culver in the fourth plane, who was to pick up the Washington-Philadelphia mail and carry it on to New York took off—after the accident to the Washington ship—and reached Belmont Park at 3: 37 in the afternoon. He came in escorted by seven planes, and made a perfect landing, completing the schedule for the first day's flying.

Although one plane had failed, three had finished their tasks efficiently and the men who fostered the air mail could feel justified and hopeful for the future.

Approximately six thousand letters were safely delivered. The three planes to complete their flights averaged about 80 mph.

While the rate charged for letters was twelve cents an ounce more than train mail, it was thought the excess would be justified by saving in time, not on mail between New York and the other stops, but that New England mail brought by rail overnight to New York could be delivered in Washington the next day.

IV

The second day brought two disasters to the infant service, although neither was attended by any particular danger.

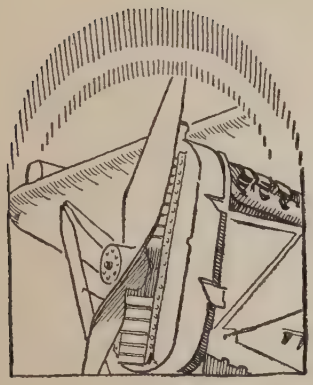
Again the north bound plane from Washington was one of the victims.

Taking off promptly at 11: 30 in the morning, the pilot, once aloft and straightened out for the run, discovered the compass again spinning wildly. Frantically he sought some object on the ground below to get his bearings, but failed to recognize anything. He had never flown over the country. Rendered more difficult by a light haze, the landscape was as desolate of indications for direction as the unmarked sea. He circled vainly hoping to pick up something that would give him assistance. A strong west wind drifted his ship farther away from the correct course. In despair he peered down upon the unfamiliar hills, little huddles of unknown villages, rivers and streams that he had never seen. He persisted until the gas was almost exhausted. Then to his amazement he saw the pale gray edge of the sea rising before him and made a hasty landing to find he had flown far across to the Virginia capes.

The other plane to meet with ill fortune was the New York to Philadelphia ship piloted by Lieutenant Stephen Bonsel.

He rose from Belmont Park at the hour of departure with only seventeen pounds of mail in the forward compartment. Once in the air he found a low visibility with a gathering ground haze and a bank of fog creeping slowly in from the ocean. Hoping to reach his destination before the fog became too thick, he forced his plane to 8,000 feet and pointed its nose south. The haze below became denser. Presently the earth was muffled in a pale mist blurring all objects into one dull unrecognizable vista. From the east the fog blew more rapidly. Lieutenant Bonsel soon realized there was little chance of his reaching Philadelphia. Wisely he began to seek a landing place before the world was shut completely from sight. It was a moment filled with dangerous possibilities. He was off his course and knew nothing of the country below. Dropping steadily, he peered right and left over the cockpit cowling for a patch of smooth land. A town appeared in the mist and on its edge he saw with satisfaction the oval bare space of a horse race track. He throttled the motor and glided in for a landing, when he discovered that a number of horses were grazing in the center of the field. Not wishing to land among them and perhaps kill several, in addition to wrecking his plane, he zoomed abruptly and circled the track, flying low, thinking the roar of the motor would frighten the horses and give him space for setting his ship down. The horses never moved. Again he tried diving his plane, engine wide open and the exhaust thundering. Not a horse stopped its grazing. There was nothing left for him to do but to try and land. The fog was settling and in a few minutes would blanket the earth. He brought the plane in as slowly as possible and succeeded in avoiding the horses, but saw at once his speed was too great. The

plane bounced and hurtled across the short field. Lieutenant Bonsel caught a glimpse of a fence directly ahead. There was a crash, the plane lurched, the tail kicked forward, but it did not turn over. Unhurt, the pilot crawled out. Both wings were ripped from the fuselage and the propeller shattered. Lieutenant Bonsel secured a motor truck and loaded on the mail which was forwarded to Philadelphia.



IV

THE AIR MAIL GOES THROUGH!

ALTHOUGH the air mail from the start far exceeded the expectations of its most optimistic exponents, there was little change in the attitude of the people who were in opposition.

Instead of being proud of the fact that America had the only regularly operated air mail system in the world, Congress remained apathetic or hostile, many newspapers attacked bitterly the project and everything possible was done to hinder its development. In spite of the lack of money, of adequate planes, landing fields, and facilities for the maintenance of the machines, the air mail continued to fly, holding doggedly to the schedule in weather when no planes should be aloft. Forced landings became fewer as pilots learned the country above which they flew. Every day except Sunday, that it was possible to lift a ship off the ground, the little group of Army fliers pushed their slow, blunt-nosed craft north and south.

They were like the first sailors who set out upon unknown seas in untried vessels. There was no data on cross-country, all-weather flying. Until that time, when high winds blew, storms arose, rain and fog hid the earth, planes and pilots stayed upon the ground. Even in the war there were many days when the weather was " too bad for flying " and patrols stayed in the hangars, despite the battle raging along the storm-torn front.

Weather was, and still is, the natural enemy of the airplane, but in 1918 few attempts had been made to overcome this many-headed monster and most of those had resulted in disaster to ship and pilot.

Lieutenant J. C. Edgerton, who relayed the first mail from Philadelphia on to Washington, said: " The physiological obstacle of weather set up in the minds of pilots in those days had to be overcome before the air mail could be successful. We were told half the time our flights would be halted by bad weather. No ship could live in a gale. No pilot could overcome the handicap of fog and rain and sleet. Why, no one had ever flown through a thunder-storm. The thought of being caught aloft in a bad storm was always in our minds. What would we do? What could we do? Our ships might be torn apart in mid-air for all we knew. We had no experience to go upon. We had to find out everything for ourselves. I was the first mail pilot who flew through a thunder-storm. It was on the regular trip south from Philadelphia to Washington. In July, I think." . . .

One of those blistering summer days, the air heavy and still and a storm inevitable before nightfall. The earth below sweltered in the dense heat. A thin haze, like steam, lay over the country,

as though someone had poured water upon a hot griddle. There was little relief, flying. The heat of the motor added to the discomfort of the sun. The narrow cockpit of Lieutenant Edgerton's plane was like a steam-cabinet. He couldn't keep the glasses of his goggles clear of moisture. The old Jenny lumbered along through the burning sky, its pilot unaware that a short half-hour would find him in the midst of a situation which every flier looked forward to with anxiety and uncertainty. Presently he noticed a few dark clouds protruding above the haze of the southern sky line. For a few minutes they hung motionless, a line of unsubstantial mountain peaks, a strange new geography in the flat, hot, green Maryland landscape. Then they trembled as the wind drove their bulks into view. Out of the dark heart of the storm the glittering streamers of lightning cut momentary rents and thunder shook below the up-ended mountains. Now was the time for the yellow plane to descend; now, while the air remained quiet, before the black maw of the storm swallowed the sun, and drank all the light from the sky.

Unswerving, its shining propeller dragged it toward the towering mass that filled half the heavens. " When I come out of this," the pilot thought, " I'll know something about thunder-storms."

He caught a glimpse of the Potomac River and the race track at Havre de Grace. A burst of cold wind, edged with hail and rain, struck the plane. It bucked like a frightened pony. There was a jar and shock as though it had struck something actually solid. With a roar the storm engulfed plane and pilot.

" I hit it first at about 4,500 feet," Lieutenant Edgerton said. " It was a line-squall, the most deadly kind of storm. No one knew

anything about them. It was like something solid. There wasn't an opening anywhere. There was no turning back then. I gave the old Jenny everything she had and climbed to 10,000 feet. The storm was still above me but there were broken patches. I went in at 10,000. Everything vanished in a turmoil of storm, rain, hail and lightning. The tips of the wings were hidden. I was in it for an hour without knowing where I was. I came out by luck, almost on my course. The prop was chewed by the hail, but I'd gotten through."

He paused, considering, and said: " That, I believe, was the most important thing we did, during those two months and a half that army pilots flew the mail. The psychological dread of bad weather was overcome. We found that we could fly on days when previously we never dared take off. It was not a case of becoming careless, for no good pilot ever loses respect for the power of a storm, but we met and conquered a mental hazard and proved that even our under-powered planes were capable of far more than anyone had ever thought."

In August the service had become so efficient that the Army withdrew its control and planes and pilots were taken over by the Post Office Department.

Day after day those sturdy planes bearing the words U. S. MAIL on their long fuselages shuttled between New York, Philadelphia and Washington. It was an impractical route, except for the saving of time on the delivery of New England letters in Philadelphia and Washington, but as a testing ground for the possibilities of air mail service it was ideal. The data of every flight was carefully studied; the necessity of an expert ground corps for handling the

A BURST OF COLD WIND, EDGED WITH HAIL AND RAIN STRUCK THE PLANE

machines was quickly discovered; lighting of airports and beacon guides were problems still unsolved. Dependable instruments to guide the pilots on this new cross-country flying were needed. The use of larger planes with greater load capacity was realized at once, and plans were made to secure from the Army several DeHavilland two-seaters, powered with the new 400 horse-power Liberty motors that had just been perfected. All this took time and money and there was little of one and less of the other.

The war, of course, absorbed the interest and energy of the nation, and the little group of pilots and mechanics of the air mail treated their few planes with the tender care usually devoted to babies. They knew the difficulty of getting a new ship to replace one washed out in a careless landing, or crashed in some rutted field through being forced down by mechanical failure. Even to secure a new motor involved so much red-tape and time that the pilots never dared fly at full cruising speed for fear of excessive wear on the engines. Despite these handicaps, autumn passed into winter with the planes operating in a steadily increasing efficiency.

Winter came with the regular daily schedule maintained. Instead of discontinuing the service, the worn planes were pushed through the cold, rains, snow and sleet. The triumph of the inadequately equipped air force should have convinced almost anyone that given powerful new machines, good landing fields and well-trained ground crews, the air mail would soon prove its value. It seems impossible for us today to realize the lack of interest on the part of government and public. What could they have thought when hearing a motor roaring in the murk of a December day, they glanced aloft to catch a flash of pale wings athwart the dense, wind-

torn ceiling of storm? How could anyone fail to be stirred to interest by that momentary passage of a strange mechanism of steel and wood and fabric, flying when the gales blew the birds to earth, disrupted train-schedules, held great ocean liners at their piers, blocked the slow earth-bound city traffic, and made even walking a venturesome task. And this happened more than once during that winter of 1918–19. There were days when the perfected airplanes of today might have been kept in their hangars and no shame cast upon the pilots. Yet the little group of men flying the mails persisted in taking their unwieldy, slow Jennies up into the blast of the storm and " pushing " through. No colloquialism of daily speech so aptly describes many of those flights as the air mail pilot's own term to " push " the mail. It has the flavor of combat about it; and expresses exactly the surge of a plane battering its way into the solid fury of head-wind, edged with the keen knives of driven snow and sleet. Unaided by any of the modern adjuncts of cross-country flying those pilots plunged their sturdy old ships into the worst weather that the Atlantic seaboard could provide, and in most cases worried through.

Those were the men who set the traditions of the air mail. Between the lines of their laconic reports is written the story of steadfast devotion to a task at all times arduous and usually dangerous. Too much credit cannot be given to those pilots at the controls of planes that the Post Office Department soon realized were " wholly unsuited even to primitive air transportation " in carrying on doggedly the pioneer work of the air mail. For out of the mistakes and hardships of that first year grew the ultimate triumphant spanning of the continent.

Anyone who translates the colorless report of the achievements of these planes and pilots during the twelve months when the line from New York to Washington was the only route in operation can read the true story of the beginning of the air mail. The service succeeded in completing ninety-two per cent. of its flights. That means out of every six possible flying days the mails were carried through on better than five. Of the planes in use two were still using the original motors and had been operated continuously day after day. One hundred twenty-five thousand miles were flown with but thirty-six forced landings all due to mechanical trouble. No planes had fallen out of control; no fliers were killed and only six were slightly injured. The mails were taken through all kinds of weather; in one storm where the wind reached a velocity of fifty-eight miles an hour and in another when the instruments of the Weather Bureau recorded the hurricane force of eighty miles an hour and both railroads and steamers were delayed or kept in port.

In spite of these triumphs the New York–Washington route could never be really successful. "The Post Office Department soon learned that the Air Mail could not well compete with the fast trains over short distances. It became apparent that, when an hour was consumed in getting to and from each terminal field, little was saved by airplane over the five-and-a-half hour schedule maintained by railways between Washington and New York. It became evident, therefore, that the great speed of the airplane could best be utilized over long distances and between large centers of population. This was the genesis of the idea of the transcontinental air mail—an idea similar to those which had fascinated early

pioneers, ideas which ultimately resulted in our coast-to-coast railway system."

So out of the experimental work of a band of military and civilian fliers and a few planes never intended to carry letters, came the actuality of the air mail.

V

THE AIR MAIL HEADS WESTWARD!

I

WESTWARD the fledgling air mail turned its flat-nosed, newly acquired DeHavillands with their roaring twelve cylinder Liberty motors—the finest designed engine for airplane that had ever been built in America.

A route was laid out from New York to Cleveland as the first step in the ambitious project of covering the 2,600 miles to San Francisco. The distance as planned was over what is probably the worst flying country in the world.

One year after the opening of the New York–Washington route planes began to fly regularly from New York to Cleveland. Letters, mailed too late for the through trains between New York and Chicago were taken by plane to Cleveland and put aboard the train which had left New York the previous night. This was a development of the air mail in the right direction. Time was

saved and when the air mail route between Chicago and Omaha was added, the combination plane-train service cut many hours from the time necessary for transcontinental mail.

The air mail was expanding rapidly but it remained an adjunct of the regular railroad mail service and it had yet to prove the faith of the men who conceived it as an individual method of communication, existing in its own right.

And as the service grew, as more dangerous routes were to be flown, greater distances, the lack of proper equipment and facilities became more apparent.

During the year of flying the mails between New York and Washington only thirty-six planes had been forced down while in flight, there were no serious accidents to ships or pilots and only a few minor injuries. Between the opening of the New York–Cleveland route in May 1919 and November of the same year there were a number of bad crashes and three pilots were killed.

The Post Office Department was still dependent upon the Army for its planes and there wasn't enough money to properly service the machines or maintain the landing fields. The vital adjuncts of mail flying such as weather reports, systems of communication between fields and pilots were practically non-existent. The DH4's were far from ideal mail planes and there were no instruments by which a pilot, caught in fog or storm, could fly blind.

Yet so great was the devotion of the men that the mails were flown over ninety per cent. of the time and the handicaps were everywhere overcome. The record of those days of struggle is something to stir the blood, to look back upon with pride. Surely here was laid the fine foundation of a great service; here were estab-

TRAINING AN AIR MAIL PILOT

lished the traditions for courage, ingenuity, sacrifice, loyalty, that have established the air mail, maintained it against stupid opposition, indifference and incompetent authority. From those worried days, arose the men who with wisdom, patience, tenacity and high courage, added the long miles of prairie, mountain and forest to the conquered territory; built fields that became models of efficiency, organized ground crews whose every thought was devoted to the care of their pilots and planes and in all ways backed up the thirty pilots who were " pushing the mails."

They were thrilling years from 1919 to 1923, filled with triumphs and disasters. Triumphs of sheer skill and courage among the men who peered with aching eyes into sudden fog, seeking some glimpse of known land below, glancing at the maps—home-made maps drawn by the pilots themselves—flying their ships by that

seventh sense which was often to betray them, watching for a pale flare of gasoline set afire to help guide them down to the fields, many of them treacherously soft, inadequately marked. There were other triumphs of different kinds, among the mechanics who labored endlessly, unselfishly, upon those converted bombing planes, keeping them in the best possible condition for their pilots, hampered in their repairs by lack of supplies and equipment, hindered by the knowledge that no matter what they did these military machines were *not* mail planes and there were certain structural flaws and weaknesses no mechanic's ingenuity could overcome.

And every moment, at every mile over those tumbled mountains of Pennsylvania, where there is practically no safe landing for a hundred miles, lurked the most treacherous weather conditions conceivable. Fog, always fog, that dreaded foe of the aviator. Sudden storms, rain, hail, sleet, snow; violent wind currents, squalls driving down the valleys without warning. A pitiless country, a twisted landscape of forest-clad mountains, where a pilot, if by some chance he got down alive, might starve to death before he was found. You will never find a pilot with a good word for that region of the Alleghenies. But they continued to fly across it, day after day, winter and summer. They might take off with brilliant sunshine glittering on the wings and reports from Bellefonte of clear weather and arrive, as one pilot did, to find the world below lost in fog. "Nothing but nothing," as one of them remarked. There he was, and a momentary glimpse of a mountain located his position above the Bellefonte field. But he could see nothing more. He was trapped by two thousand feet of invisibility. To go down into that swirling, blind region was to invite

a quick end to all his troubles. His only safety was to remain aloft and hope the fog would break. Fortunately the gas tanks were fairly full. The flight out had been on a tail-wind and he had more than the usual quantity of gas remaining. He " sat around " watching with intent eyes the veils drawn over the earth. Around and around he circled waiting, noting the slow fall of the gasoline indicator. Many of the pilots didn't wear parachutes in those days, and he was one of them.

The men on the field could hear the muffled roar of his motor, now faint, now loud, as his course brought him across the field. Frantically they lit flares of gasoline but the fog absorbed the light and no ray could penetrate to the pilot above. There was absolutely no method of guiding the plane down; no radio or radio-telephone, no beacon strong enough to penetrate the fog. In despair they awaited the inevitable crash. An hour passed. Still the droning sound filtered down to them. Another hour passed without change. The tension became acute. They knew he could not have much gas left. Slowly the minutes ticked away. The thunder of the motor dwindled, vanished. " He's crashed! " they said. But presently they heard it again, directly overhead. More minutes of agonized waiting followed.

In the plane the pilot watched the gasoline gauge creeping toward zero. Now he was on his emergency tank and barely five minutes flying remained. Five minutes to live! He decided abruptly not to wait, pointed the nose of his plane down and went into a dive.

The miracle happened!

Ahead of him a long rift appeared in the fog. Steadily it

widened until he saw the green rectangle of the narrow field rushing up to meet him. Down between the walls of fog he sped, roaring with motor full on to reach the ground before the fog closed in again. He pulled the ship out of the dive with a jerk that shook it from nose to tail, flattened out and landed safely.

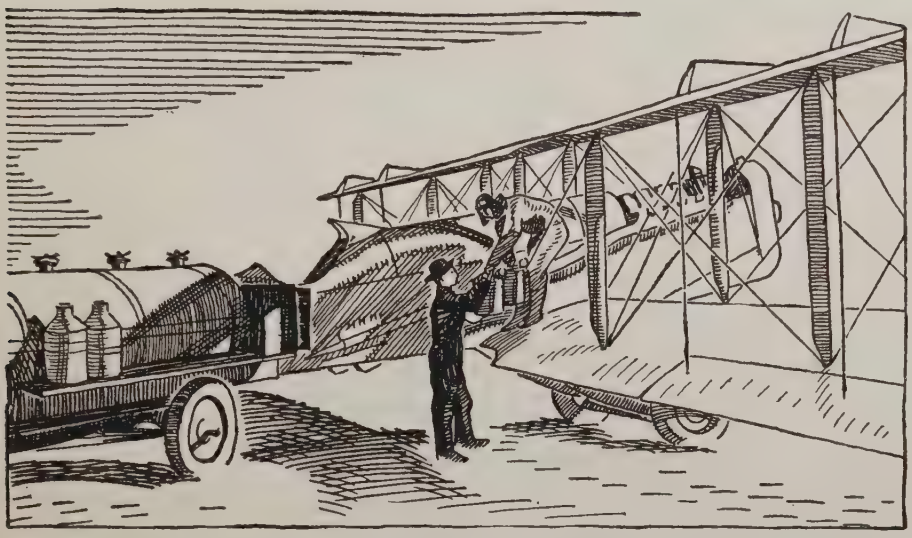
Things like that happened flying the air mail from New York to Cleveland.

II

Month by month the trail across the continent was extended. In September of 1919 two pilots made an experimental flight over the whole way to determine the possibility of through service. The eastern route was lengthened to Chicago and finally the mails were carried through to Omaha in a day and then loaded aboard trains. This enabled letters to reach San Francisco in three days.

The air mail was improving due entirely to the spirit existing in the service, for there had been little help from the Government. Pilots, field managers and ground-crews worked tirelessly to maintain the standard. One pilot made 106 trips in eight months without a single forced landing from mechanical trouble. On the Cleveland–Chicago leg 205 consecutive flights were made with no forced landing. Through storm and sunshine they pushed grimly ahead. When a tornado raged over Ohio and Illinois, killing 103 people, the mail went through.

Pilot Harris was at the stick of the mail plane that left Cleveland for Chicago on the day of the tornado. In his report of the flight he wrote:



TAKING ON GAS AT AN EMERGENCY FIELD

"I had nice sailing from Cleveland to Bryan but beyond there it began to get rough and bumpy upstairs. I ran into the worst rain and hail storm I ever hit near Gary. For about five minutes I couldn't see anything, not even the instruments on the dashboard in front of me." . . .

Across the flat Ohio plains the winds were unleashed and in their fury were making kindling of farmhouses, tearing trees up by the roots, blasting the small scattered towns and villages, leaving a trail of destruction, terror and death. People scurried below ground to the shelter of cyclone-cellars while their homes were ripped from their foundations and strewn across the fields. It seemed as though there was nothing rooted solidly enough in the earth to hold against the power of the wind. Yet a mile above, Pilot Harris pushed his DeHavilland's flat radiator into the teeth

of the storm, a storm so thick he "couldn't see even the instruments" on the board only a scant two feet before his eyes. The big plane lurched and bucked and threatened to crumple in the air. The roar of the wind drowned the thundering exhaust of the motor that was hidden from view in the murk of darkness. The rain came solidly, like a flood unleashed. . . . The report continues . . . "The motor sputtered and missed and I thought of how cold Lake Michigan under me would feel. The way the lightning was flashing was something fearful, but I guess from the papers, I was as safe in the air as the people on the ground. Anyway, I sat tight, hoping to reach the other side of the storm. Well, I reached the other side, where there was a heavy downpour of rain from a higher cloud, but the visibility was delightfully better. Within ten minutes I landed at Grant Park, Chicago, in beautiful sunshine." . . . And to the surprise of everyone who had never expected to see him again.

The mail had gone through when railroad communications were delayed or completely stopped, two states covered with the wreckage of the storm. Eighty-seven per cent. of the schedule was flown that year and on the New York–Washington route, now two years old, ninety per cent. of the trips were completed.

The air mail was proving its worth but bitter days were ahead.

III

Pilots were being killed too frequently. The DH4's, never intended for such work, nosed over on the soft fields, caught fire and either crushed or burned to death their occupants. A series of

TOO MANY PLANES WERE COMING DOWN IN FLAMES

casualties awakened the press who assailed the air mail, as a reckless venture, resulting in loss of life, in destruction of mail, and public confidence was shaken. Toward the end of 1920 it appeared as though the air mail would lose all its hard won advances.

" Flaming coffins " became the nickname for the planes recently put into service. Skill and courage could not overcome everything, for many of the pilots had no chance for their lives and even the experienced fliers, such as Wesley L. Smith who had flown the mail since 1918, and who had a reputation for luck, found himself high in the air with his plane afire. By superb skill he coolly sideslipped so the flames were blown away from him and although he crashed, escaped with his life. After leaving the hospital he resumed flying, his face still scarred from the accident.

Conditions became so bad that the pilots on some divisions protested against the incompetence of the men in charge. Finally the fliers were requested to send in their recommendations for a type of plane that would fulfill the requirements of mail carrying and J. E. Whitbeck designed a special DeHavilland for the service. At least twenty-five changes were made in the ship. The landing gear was moved forward nine inches and strengthened, the fuselage was made heavier, refinements and new fittings resulted in the DH4-B that remained the standard mail plane until the Government relinquished the air mail to private interests.

At the same time a complete reorganization of the entire system weeded out incompetent officials. As a result no more pilots were killed by structural failures and the mail was carried regularly on its prescribed schedule.

IV

At the beginning of 1921 the Post Office Department decided to try an experiment with the air mail, and in spite of the lack of proper facilities for night flying, organized an attempt to carry the mails from coast to coast entirely by plane. Weeks of preparation were made and a group of pilots on the Cheyenne-Chicago route volunteered to fly their division in darkness.

The newspapers referred to the proposed trial as a race but to the air mail it was of far greater importance. Something had to be done to arouse interest and inspire confidence in the future of the service. In Congress an appropriation of money languished while Senators protested against the futility, waste and hopelessness of trying to fly across the continent. On the 23d of February everything was ready. Two planes were to take off from New York and two from San Francisco. It was hoped that in this way one set of pilots would succeed in getting through in thirty-six hours or less.

Carrying 350 pounds of mail Pilots Leonhard and Allison sat in the ships on Hazelhurst Field awaiting the signal to take off. Dawn had scarcely come. In the bleak mid-winter sky a pallid split across the eastern gloom shed a thin light over the two planes and the empty field. The motors sputtered in the cold. The pilots were shapeless huddles of clothes in the cockpits as they gave a last testing of ailerons, flippers and rudders, opened their motors slowly, watched the dial that recorded the revolutions per minute, listened to the steady shriek of the exhaust, the ear-numbing sound which meant safety to them and success to the venture.

"Come on," muttered Leonhard, "let's get going. Old 157 is anxious. Up and at 'em, baby. What are they waiting for?"

The clock on the dial pointed to six. The frozen ground shone frostily in the wan daylight. The hangars bulked large and dark across the sky and the stark, dead trees stretched their spidery boughs stiffly into the pale ground mist. Mechanics beat their numb fingers and the few spectators shivered in the chill air.

Westward lay the "graveyard of the Alleghenies" where too many fine ships and stalwart fliers had made their last flights. Woodward Pass hung its shrouds of fog for the unwary pilot; treacherous winds lurked in the valleys hungry for some violence. The narrow haven at Bellefonte field was a long way off. Both pilots considered these things in some deep part of their minds, but all the conscious energy was occupied by the task at hand.

Leonhard received the signal to go.

The slow throb of the twelve cylinders increased to a howl. Chocks were jerked away. He taxied out, turned into the wind and gave No. 157 the gun. The long DH sprang forward, level and eager, rose easily, climbed above the hangars, banked and turned, flattened out to gather speed, and then rising gradually, headed west and vanished. Ten minutes later Allison repeated the performance.

On the Bellefonte fields the ground crew anxiously awaited the arrival of the two ships. Weather conditions were not reassuring, and from beyond, toward Cleveland, there had come reports of gathering storms with sleet and snow and sudden fog. Standing out of the wind, the mechanics scanned the hazy distance and worried.

" Listen, if anybody can push a ship through, those two can do it. I ain't worrying about them on this leg but I heard it was getting pretty thick over Ohio."

" What's that? "

" What's what? "

" I thought I heard a motor."

" You're hearing things."

The field manager hurried by, frowning intently and glancing at his watch.

" What's the time, Jim? "

" Seven-fifty."

" Ought to be getting here."

They stamped about in the cold, fretting. Suddenly a low buzz filled the air.

" Here he comes! "

" Here comes the mail."

In the pale sky the thin dark line of fuselage appeared.

" Out on the line! "

Rapidly it grew in size, the thunder of the motor reverberated against the mountain sides.

" It's Leonhard."

The plane circled the field and came in, side-slipping into the narrow field, touched lightly to earth and ran along toward the hangar. Instantly the mechanics swarmed over the ship, replenishing gas and oil, testing controls and flying wires.

" How was it? " asked the manager.

" Not bad," said the pilot. He descended and beat warmth and life into his cramped body.

"Not so good from here on. The ceiling's down in spots to five hundred feet."

Weather reports were studied intently. Twenty minutes later Leonhard climbed back into the cockpit, waved his hand and was away. The weather *was* bad. 157 pitched into a violent gale. Fog and cloud drew close about the plane. Helpless, the pilot watched the landscape vanishing. He came down lower and lower. Presently he dared descend no farther. He landed twenty-five miles south of Dubois in a field. The plane was slightly damaged. He sent word he would make repairs and go on, but the storm increased and it became impossible.

Meanwhile Allison reached Bellefonte, refueled and pushed ahead. He was more fortunate and succeeded in reaching Cleveland shortly after noon. Seven minutes from the time his wheels touched the ground the mail had been transferred and Wesley L. Smith, second ranking pilot, was hurtling toward Chicago. Despite the increasing storm he made good time and arrived at 3: 10. There he found everyone discouraged. The wind had reached the strength of a gale. It was impossible to get a ship into the air for the flight on to Omaha. The gallant attempt seemed doomed to failure.

The east bound mail had suffered a worse disaster. Captain W. F. Lewis carrying on from Reno to Salt Lake had landed at Elko. When he took off his plane zoomed steeply, hesitated, stalled and crashed. When the horrified ground crew reached the wreck the pilot was dead. A pall of despair swept over the men as the news spread.

Only one of the four relays of planes was able to plug ahead.

HE STORMED OVER THE MOUNTAINS

From San Francisco Pilot Nutter had flown to Reno where the mail was hurriedly packed into Eaton's plane and he stormed over the mountains and handed on the task to Murray who flew into Cheyenne. Darkness had come. The moon appeared and vanished among the heavy clouds of a lowering sky. Desolate and black the prairies shuddered under a bitter wind. Pilot Frank Yager hunted through the darkness the few landmarks which would guide him into the dimly lighted field at North Platte. It was a desperate business but he made it and the mail was loaded into Jack Knight's awaiting plane. Into the night he forced the long ship, unaware that upon his shoulders lay the ultimate success or failure of the whole venture.

Omaha was the key field in this transcontinental flight. Pilots in the western divisions only flew that far where they connected

with the eastern fliers and transferred the mail and returned over the routes they knew. Knight covered the 248 miles between North Platte and Omaha and set his plane down with its cargo of 16,000 letters, content with the knowledge that he had done his share of the program.

"I'm hungry," he said, crawling out of the ship, "and, boy, I'm tired. This flying in the dark takes it out of you."

He didn't notice that everyone wore an air of mingled despair and uncertainty. He wasn't feeling any too strong, for he had not fully recovered from a crash two weeks before in the Laramie mountains, where his plane had been caught in one of the sudden cyclonic winds that burst through the sullen canyons and flung against a mountainside. The plane was a complete wash-out, engine torn from its mount and buried deep in the snow-drifts, while the fuselage rolled down the slope and splintered on the rocks. Knight regained consciousness an hour later to find he had been jerked from the cockpit and thrown clear of the wreck. He was cut and bruised, his nose was broken, but he stumbled down the mountainside, plowed through the snow for seven miles to a ranch. Here he reported the accident and sent instructions for recovering the mail. His familiar grin had returned, but his body still ached with bruises and he tired easily. He went off to get something to eat while the Superintendent pondered the problem that lay before him.

The two westbound planes were still in Chicago, held to earth by the storm. There was no other pilot to carry the mail east from Omaha to Chicago, and no plane but the one Knight had just landed.

" When he comes back we'll ask him and see how he feels about it," said the Division Superintendent.

Knight returned and the situation was explained.

" Sure, I'll go," he said. " Wire my wife, will you? "

He had never flown the Omaha–Chicago route. He went into the field-manager's office and for a quarter-hour studied the map. Then he tore off a section.

" All right," he said. " Let's get along! "

He climbed into his plane and roared away a few minutes before two o'clock in the morning. Somewhere, 424 miles away in the darkness lay Chicago. The flight for the first hour was without incident. The sky cleared and the moon shone. He calculated a compass course for Des Moines and presently, to his satisfaction, saw the glow of the city and decided not to stop. Beyond Des Moines the weather began to change. He was flying fairly high and peering over the rim of the cockpit saw thin layers of white cloud drifting below him, shutting away the ground. His only safety and hope for success was to keep in view such landmarks as he could easily recognize and check on the map. Putting the plane into an easy dive he came down from 2,500 feet to within a hundred feet of the ground. The air was bumpy close to earth. He said: " Flying was pretty bad at that altitude. The air was rough and the valleys were packed with fog. Next I began to get snow-flurries and by checking my compass course I knew the wind was shifting. I was slowing to eighty-five miles an hour. Then I lost my horizon and got to wondering if I'd reach Iowa City."

There wasn't much time for wondering. Gas and oil were necessary for the flight to continue. Knight knew that upon his get-

ting through depended the whole plan. Below him, only as far away as the height of an average building, the dark earth rushed by at blinding speed. The lumps of lightless farmhouses, the black patches of woods, the blurred gray fields; all strange, all unknown and silent. Over his own route he knew every barn and road, each hill and stream, almost recognized individual telephone poles. Here, in the still, gloomy world, nothing was familiar, except as his vigilant glance recognized some landmark plainly interpreted from the map before him. Most of the time he followed the faint parallel glint of the railroad. "I wagged along," he said, "hoping soon to hit Iowa City. Well, I did hit it—right on the nose."

But he had no idea where the field was. He flew over the sleeping town, circled and returned. For ten minutes he searched in vain. Then in the dark he saw the red spurt of several flares, and sighed in relief. He swept down and landed at quarter of five.

When the plane was refueled he took off on the last 200 miles of his epic journey. He was tired now, cold and exhausted. It was an effort to keep his attention fixed on the instruments, to keep awake at all. After an hour's flying, the first dull threads of dawn were spun over the eastern sky. "Down below lights began to flash around farmhouses—the farmers were out with lanterns to feed their cattle. And in towns, too, people were stirring." He watched those specks of light bobbing through the chill morning, and the men who carried the lanterns heard the sharp roar of the motor, tilted their heads back, wondering sleepily at the temerity of those "air mail fellows" who rushed across the night at a hundred miles an hour. He saw the tiny figures of early workers,

hurrying along streets white with the night's snowfall, and the gray twists of smoke rising from chimneys. " The old world was waking and getting on the job again, and I guessed, after all, I'd have breakfast with my wife in Chicago." That was a reassuring thought. He felt refreshed. Nothing could stop him, now.

Then the motor missed. But he only said:

" Just spit, old boy, we're here."

Below was the Maywood landing field. Down came Jack Knight with the east bound mail. Jack Webster was waiting to pack it off to Cleveland, flying under a ceiling that threatened to force him down to the ground. At Cleveland Allison hopped off on the last lap and roared wide open all the way to Hazelhurst Field and turned over the six sacks of mail to Division Superintendent J. E. Whitbeck.

The flight, from Pilot Nutter's take-off at Crissey Field, San Francisco, to the arrival of Allison at the eastern terminus, had taken 33 hours and 20 minutes, but the actual flying time was 25 hours 53 minutes, an average of better than 103 miles an hour.

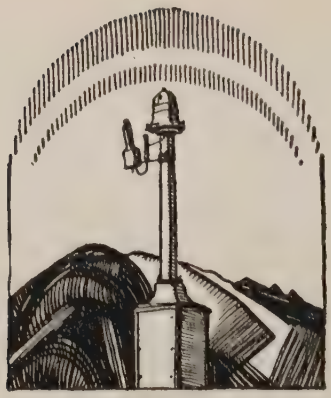
It was a triumph for the service, and the achievement of Knight aroused the public to a deeper interest in the air mail. Assistant Postmaster-General Otto Praeger, under whose supervision the flights were made, said:

" The all night flight from Cheyenne, Wyoming, to Chicago, a distance of 839 miles, of San Francisco mail bound to New York by the regular equipment of the Air Mail Service, is the most momentous step in civil aviation. The Postmaster-General some time ago directed that the air mail enter upon regular night operations, and the flight by a pilot never over the ground before, in black

night, through snow-flurries and fog drifts, with three landings for refueling and exchange of mail, is a demonstration of the entire feasibility of commercial night flying. It will mean the speedy revolutionizing of the letter transportation methods and practices throughout the world."

It was an astounding feat, marked with the courage and loyalty which were and always will be characteristics of the men who fly the mails. The best previous time for passage of mail from ocean to ocean was 72 hours by train and plane. In one effort this had been reduced by half and the practicability of continuous coast-to-coast flying demonstrated. The daring of Pilot Knight attracted the attention of people who had never considered seriously the air mail. Of equal interest to the pilots themselves and the men in the service was the flight of Pilot Harry Smith. When the unfortunate death of Captain Lewis stopped the second eastbound relay, Smith was waiting at Cheyenne. He took off with what local mail there was at seven o'clock and flew without stop to Omaha arriving at eleven thirty.

It is characteristic of the air mail pilots to be reluctant to discuss their achievements. Jack Knight said: "It was simply my good luck that gave me the chance at this trip, and any other pilot in the Air Mail Service would have gladly tried the flight and probably gotten away with it as good or better."



VI

THROUGH THE NIGHT

I

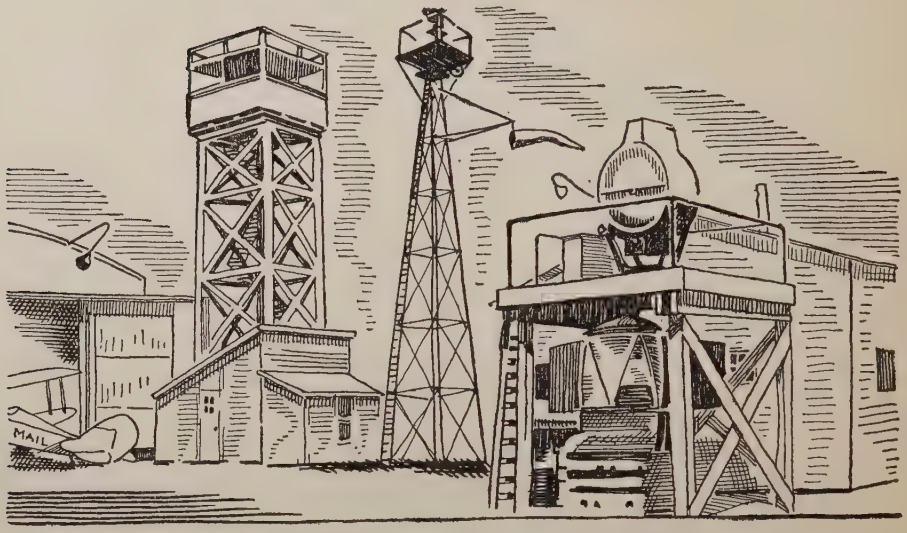
IN spite of the relatively successful transcontinental flight of February 1921, a long time was to elapse before the air mail was ready to fly regularly, night and day, in continuous passage from ocean to ocean. That the mail had gotten through was due entirely to the skill and courage of the pilots, and everyone realized the impossibility of attempting a daily schedule without some adequate method of lighting the eight hundred miles that must be flown in darkness. Three of the four relays had failed and the percentage of success was too small for commercial use. Experts still predicted that night flying " might be possible, but that it was not practicable." The train and plane system continued and every effort was bent on improving the efficiency of the ground crews and care of equipment. So well was this done that the following year the personnel of the Air Mail received the Collier Trophy for " The Greatest Achievement in Aviation in America "

when the mails were carried over a period of twelve months without a single fatal accident.

II

In 1922 Colonel Paul Henderson was appointed Second Assistant Postmaster-General and given charge of the air mail. No more fortunate choice could have been made. Today he is called the " Father of the Air Mail " and he earned his title during those two years before the transcontinental day and night route was established. He was one of the few men who realized that the ultimate triumph of the transcontinental mail depended upon the success or failure of night flying. Everything had to be learned and Colonel Henderson began experimenting at once. The only thing that was sure was the necessity of brilliant lights to guide the pilots from along the route and to their landing fields. No one knew what kind of lights were needed or how far apart they should be placed. It was a question of trial and error.

The first attempt was the construction of a huge dome, similar to the dome of the Capitol building at Washington. This was painted white and illuminated with spotlights. When it was finally finished and tested it could be seen barely fifteen miles. Then high-powered search-lights were obtained and placed so their beams rose straight into the air in the theory that a pilot could see them for many miles. This proved untrue. On cloudy nights the reflection of the light on the clouds could be distinguished a considerable distance but on clear nights the beam was impossible to locate. Lights were erected on tall poles, but these were useless.



SYSTEM OF LIGHTS ON MAIN FIELD

The solution of the problem was obtained by chance.

Colonel Henderson was at the railroad station of a small town in central Illinois waiting for a train back to Chicago. He glanced down the track and saw the headlight of the locomotive apparently two or three hundred yards away. Walking down the platform he took up his bag preparatory to getting on the train when the station agent told him there was no hurry as the train was still twelve miles away. He explained the track was absolutely straight for that distance and the headlights appeared as brilliantly as though the engine were almost at the station. Colonel Henderson pondered this phenomenon. If the beam of a locomotive headlight could be seen at that distance surely a powerful beacon would throw a ray that could be distinguished four or five times further. The solution was to use a *horizontal* beam and not vertical. Elec-

trical engineers were called into consultation and the experimental laboratories built a beacon of 450,000,000 candle-power that revolved three times a minute. These revolutions of the light were to enable the incoming pilot to see the ray no matter from what direction he arrived. It was erected at North Platte, Nebraska, and was immediately successful. The beam could be seen almost 150 miles on clear nights. Smaller beacons of 5,000,000 candle-power were placed on the emergency fields twenty-five miles apart and every three miles between there was an acetylene blinker light. Preparations were rushed ahead and the section from Chicago to Cheyenne, over flat prairie and farm lands was selected as the part of the route to be flown in darkness. This stretch offered the fewest natural obstacles and enabled the difficult eastern division over the Alleghenies and the hop over the Rockies to be traveled by daylight.

Meanwhile a number of pilots who regularly pushed the mails between Cheyenne and Chicago had voluntarily begun night flying. Jack Knight, E. M. Allison, L. H. Garrison, W. C. Hopson, H. T. Lewis, J. F. Moore, Dean Smith, Frank Yager, R. G. Page, E. F. White, had devoted their off-duty hours to learning the intricacies and problems of flying in darkness. Fields were equipped with the best lighting systems that could then be devised. They left much to be desired but the energy of such men as Carl Egge, who was Colonel Henderson's right hand man and Superintendent Collyer, enabled the night air mail to take on the semblance of reality. Planes had to be equipped with landing lights, red and green running lights and a bright white light on the tail that could be operated to flash the dots and dashes of the Morse code.

On August 20, 1923, the regular mails were suspended four days in order to test the through transcontinental carrying of mail by airplane.

From San Francisco and New York planes roared at dawn east and west, approaching by relays the ships waiting at Chicago and Cheyenne to carry the mail for the first time regularly over the night-dark lands of Kansas, Wyoming, Nebraska, Iowa and Illinois.

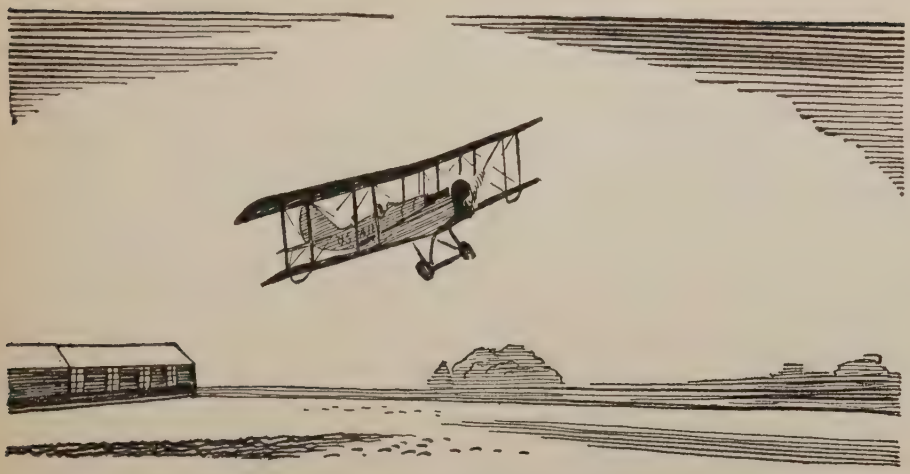
It was the real trial of the air mail. It is doubtful if anywhere in the world there existed a group of men more devoted to the ideals of service, more loyal to each other, more unselfish, courageous, and uncomplaining in the face of all obstacles than the members of the air mail from the oldest pilot down to the lowliest " grease monkey " sweating and toiling, snatching at meals, going without sleep, that the Liberty motor might purr like a great cat and every turn-buckle, wire and strut be set exactly right.

Upon the efficiency of these ground crews depended the lives of the pilots and so well did they work, so carefully were ships inspected and motors tuned that forced landings through mechanical failures had become rare occurrences. After the disasters of 1920 only two pilots had been killed and both of these fatalities were the result of storms of unusual violence.

The air mail was at the turning point and every man of the personnel was intent upon doing his part and contributing to the success of the experiment.

At dusk the " great white way " flashed into life. Across the prairies the five great beacons at the main fields sent their slow revolving beams into the gathering dark. The smaller lights in the emergency fields marked safety in case of any unforeseen acci-

EASTWARD, OVER THE MOUNTAINS, ROARED THE MAIL PLANE



PILOT JOHNSON STARTS THE FOUR DAY TEST

dent and the twinkling intermediate guides were like a row of ruddy stars fallen upon the quiet earth.

At either end of the night belt, the two planes were racing east and west into the swift darkness.

Midway lay Omaha and here the planes were expected to arrive at about the same time. On the clean-swept parade grounds of Fort Crook, several thousand spectators, Government officials and the men in charge of the air mail, were gathered.

The vast field stretched empty and desolate in the gloom. No figure crossed its bare level stretch and a guard of infantrymen kept the crowd from encroaching. About the hangars busy mechanics gave a last minute inspection to the relay planes. A motor roared suddenly, shaking the quiet, subsided to a dull muttering, died away. The hangars shone like great bubbles under the glow of the spotlights. Overhead the beacon swung its slow circle and

the long brilliant fingers pointed now east, now south, now west and north, as the lamp revolved. The illuminated wind cone blew out like an enormous inflated stocking, trembled as the wind ceased, collapsed and puffed up again. Eastward the night was clear but in the west there was a thick sky with promise of rain.

Far off the boundary lights studded the field boundaries. On the beacon tower an observer watched for the lights of the oncoming planes.

That morning Pilot Eugene Johnson had stepped into his plane at Curtiss Field and with little formality started the four-day test. Only about fifty people had come to watch him depart and he carried about ninety pounds of special mail. He waved a casual good-bye and sent the yellow DH across the green turf into the air. Circling the field and climbing steadily he straightened out and began to pick up altitude for the mountains of northern New Jersey. The flight was without incident. At Cleveland the mail was taken over by Art Smith who reached Chicago and touched off Dean Smith who had the night passage to Omaha. From the west coast the successive planes carried the mail over the mountains and from field to field in a steady progress toward Omaha.

On the Fort Crook field Colonel Henderson awaited the incoming ships. Presently the lookout on the beacon tower shouted and waved. He had caught sight of the lights of a plane far off in the darkness. Swiftly they approached. Soon they could be distinguished by the crowd on the field. The beacon was turned off and the flood-lights poured a stream of clear radiance, waist-deep across the ground. Dean Smith blinked his landing lights and came down in a steep glide, made contact in a perfect three point land-

ing and rolled to a stop. Grinning, he unwound his six feet and several inches of lean body, pushed back his goggles and stretched his cramped arms.

"Feel fine," he said. "Not a bit tired. Everything perfect. I picked up the beacons without any trouble. Perfect night for flying. I came over fairly high. Less wind up there and I pushed along at a good clip."

"You're ahead of time, Dean."

"I could have done a little better, maybe," he acknowledged.

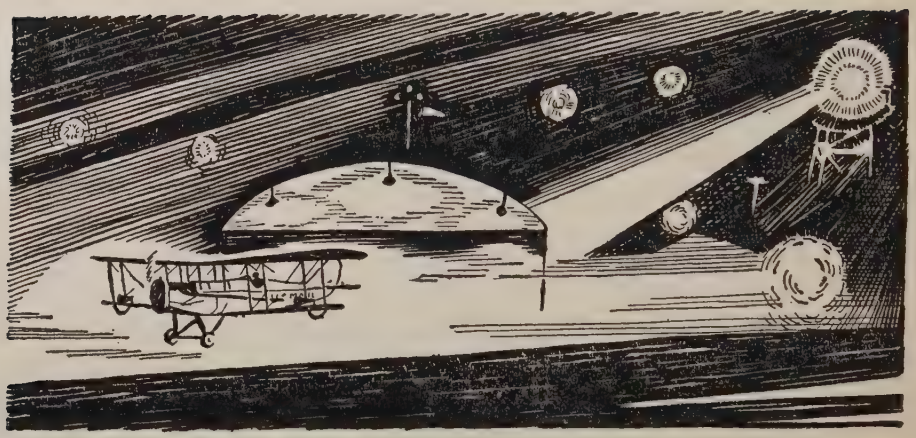
The mail was hauled out of the cockpit and carried over to the relay plane. With its motor throttled it stood ready to spring into the air as soon as the pouches were safely stowed in the mail compartment. In the pilot's seat Jack Knight leaned back and watched the post-office clerks check and pack the bags. Dean Smith wandered over and they talked for a minute, discussing the weather, most important of pilots' conversation.

"Nice flying," said Smith. "So long, Jack."

Knight waved his hand.

"I'm hungry," said the Dean, and added wistfully, "Wish I could get off for a few days' fishing soon. There ought to be plenty of blues running, now."

Chocks were jerked from the wheels of Knight's DeHavilland. He swung the ship into the wind, the slip-stream whipping up a cloud of dust from the dry field. It hung like fog, glittering in the wash of brilliance from the great flood-lights. The wings of the plane and the long fuselage were crisply outlined. Each detail could be seen. The wires shone like silver. A thin blue flame spouted from the exhaust pipe. With a roar the Liberty motor



THE MAIL LANDS AT OMAHA

picked up, as Knight advanced the throttle. The ship quivered into life. Suddenly it lost its squat inert solidity. Swiftly it ran through the radiance, losing the appearance of a machine, looking more and more like some strange bird. The wheels were still spinning, but the plane was in the air, mounting the long invisible roadway into the darkness.

Regularly, during the four days, the air mail swept east and west from sea to sea, and when the trial was over a group of weary pilots knew they had proved the utility of this new means of communication to the satisfaction of Government and public. The service had functioned perfectly; the flights were completed without a serious delay or accident. It was a triumph for all concerned from Colonel Henderson down to the lowliest helper. The best eastbound time was twenty-six hours and fourteen minutes, the fastest western flight, twenty-nine hours and thirty-eight minutes. The

difference was due to the prevailing west wind that added speed to the planes traveling toward the Atlantic seaboard.

The lighting of the night belt had served, but further refinements became necessary before the service went onto regular schedule. A new flood-light that had no glare to confuse the pilot and that would illuminate an area of one square mile was built and the gas beacons between emergency fields improved. They flashed every second and operated from cylinders of acetylene gas that furnished light for five or six months without attention. Later a sun valve was attached to them that automatically shut off the beacon at morning and turned it on at night. Better illumination of fields and hangars was adopted, and the Weather Bureau and systems of communication between fields brought gradually to a more perfect condition. Radio beacons became a subject of serious study, and the future of the air mail was assured.

On the first day of July 1924, the planes of Wesley L. Smith and Claire K. Vance left from the east and west terminals respectively and the service as we know it today went into operation.

The development of the air mail progressed steadily and rapidly. The New York to Cleveland division was lighted and night mail carried over it a year later. This was extended to Chicago and then, with the installation of lights across to the Pacific, the whole continent could be flown either night or day.

Again the Collier Trophy was awarded to the personnel of the air mail, this time for its work in night flying.

The story of mail transportation across the United States had entered upon its last chapter. In 1848 mail was carried irregularly by sailing vessel around Cape Horn to San Diego, Monterey and

THE NIGHT MAIL READY TO DEPART

Astoria, Oregon. It was a dull tedious passage, through the long, sullen South Atlantic, around the bleak, tempestuous Horn and up the Pacific. A few years later, when the gold rush had populated the western coast, monthly steamers took mail to Panama where it was carried across the Isthmus and again sent by steamer up to San Francisco. In 1857 the Overland stage coach dashed from St. Louis to El Paso and Los Angeles, taking twenty-four days. Then came the gallant attempt of the Pony Express which cut the time to twelve and fourteen days, using a relay of seventy-five horses. The telegraph ended this glamorous adventure and finally the completion of the Union Pacific brought the two sides of the country within five days. Fifty years went by before the plane-train air mail service in 1921 cut a day and a half from mail deliveries and with the night-day continuous flying the regular time became approximately thirty-three hours.

The Government had never intended to operate permanently the air mail. With the passage of the Kelly bill it was authorized to ask for bids from private concerns to take over the management and carrying of the mails. On July 30, 1927, the last mails were carried by the pilots under the direction of the Post Office Department. The route from Chicago to San Francisco was taken over by the Boeing Air Transport and on September 1st the eastern section passed into control of the National Air Transport. Most of the pilots joined one or the other of these organizations and as far as the public was concerned there was no change.

It is interesting to glance back over those nine years with all their disasters, their reckless courage, their vision and ultimate triumph over the indifference of men and the obstacles of nature. From six planes flown by Army pilots who dared the 218 miles between New York and Washington in 1918, the air mail in 1927 spanned daily the 2,680 miles of mountain, prairies, desert and farm land, in addition to several feeder lines such as the St. Louis to Chicago route. During 1927 alone, 2,583,056 miles were flown and 17,346,960 letters carried. About 40 per cent. of this distance was flown in darkness and the entire service had the high average of 93.4 per cent. perfect. Only two pilots were killed, or one fatality for each million and a quarter miles. Letters were being conveyed at a flat rate of ten cents a half ounce.

The nine years had cost the Government some $15,000,000. During that time thirty-two pilots and nine mechanics had been killed and 200 planes crashed. 495,414 miles had been flown for every death, and 79,266 miles for each crash. Of the pilots themselves two were still pushing the mails who had begun in 1918. Ira O.

Biffle with 1,962 flying hours to his credit, and Senior Pilot E. Hamilton Lee who had been in the air 4,220 hours. Six pilots had over four thousand flying hours on their records, Wesley L. Smith, Harry A. Chandler, William C. Hopson, Jack Knight, James Murray and W. D. Williams.

Over the five years that the Post Office Department had conducted the transcontinental route, along with the Chicago to St. Paul, St. Louis and Minneapolis feeders, out of 33,060 trips scheduled, 2,157 were defaulted, 30,903 attempted and only 984 not finished. 12,118 were flown in fog or storm and 18,806 in clear weather. 6,168,395 miles were flown out of 6,717,422 scheduled or a percentage of 91. 225,769,520 letters were carried, and 1,549 forced landings were from mechanical troubles while planes came down from bad weather or other causes in 7,041 landings. There were almost 10,000 miles of air ways and the mail was being flown 20,288 miles each 24 hours.

It was with a feeling of sadness the pilots and men who had shared those nine years of hardship and danger and success, saw the passing of the old days. It had been a great battle against all manner of opposition and while the new conditions might be better, still something had vanished. Their DH–4's were being retired in favor of new planes, although a few were retained on the western divisions. They had a feeling of affection for those ships that had carried them through rain and hail and snow and fog, up canyons so narrow there was no chance to make a turn, over the flat prairies, when the parching heat of summer turned the crops yellow and the bitter storms of winter covered the land with snow. They had pushed them blindly into the wrack of sudden tempests,

and skimmed the lowering ceiling of cloud that threatened to force them to disaster amid the graveyard of the Alleghenies. Frozen and numb, they had hunted for their landing fields while blizzards wiped from view all the known markers. Hedge-hopping, they had followed the rails of the Union Pacific when the sky above was a blind welter of fog and sleet. No, something had gone with the passing of the old days, something to be remembered and chewed over whenever more than two pilots gathered comfortably in some corner. The air mail was forging ahead, as it had to, and as every pilot wanted to see it. Miles were being added each month and the mails were dropping out of the skies into new towns. Progress! Each year finds the airplane speeding north and south and east and west bringing the mail across seas and islands into foreign ports and strange lands. There is no turning back, even if one wanted to; but the hearts of men turn again to a time of stress when with a few comrades they dare the future, prove the unknown and carry a dangerous mission with high courage.

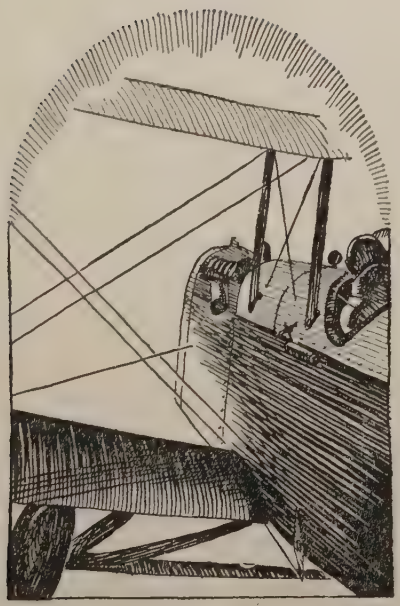
So the old crates were turned back to the Government, or sold, or scrapped and along the pathways of the air where the flat-nosed DH's had plugged away, were to come glittering new Douglas planes, and Curtiss Falcons and Boeing " 95's " with the capacity for double the quantity of mail and powerful engines that hurled them a mile a minute faster than the DeHavillands. Above the blue water of the Caribbean, Sikorsky amphibians slashed the bright tropic heavens, and Fokker monoplanes, and shining metal Ford-Stouts beat across the peaks of the western mountain ranges. But even today pilots talk of the merits of those wide-winged ships and many of them still claim that few modern planes excel them in

stability and general all around sturdy strength. Pilot Vance, who pushed the mails for seven years in DH–4's over the hump of the Sierra Nevadas, recently wrote: " Regardless of all one hears about flying coffins, old crates and what-not, these planes certainly served a very useful purpose and maintained a service that the modern mail planes have bettered but very little."

III

The air mail closes another chapter and the motion that turns the page discloses another, glowing with achievement. Many are the gallant tales to be told of ships and the men who flew them during those years from 1918 to 1927. Few records of the adventure of man upon this earth hold so many stories of daring, of loyalty and unselfishness as the casual reports in which those pilots set down the daily record of unquestioned devotion to the Service and to each other. It is an admirable and heartening thing to find in an epoch marked by personal ambition and the greed of acquisition. They gave, those men who flew the mails under the direction of the United States Post Office Department, the same obedience and unquestioning faith which one associates with the most desperate quests of mankind.

And the new page continues the same epic in a different guise. Familiar names reoccur among the new names, and the tradition that began when Lieutenant Webb hopped his Jenny into the air at Belmont Park, and Lieutenant Edgerton plowed into the line-squall over Havre De Grace, is born by new pilots roaring up from the glowing surface of Hadley Field.



PART TWO

THE MEN WHO FLY THE MAIL

I

THE MEN WHO FLY THE MAIL

I

IF the vast network of the air mail today is the direct result of the vision of such men as A. S. Burleson, Colonel Paul Henderson, Otto Praeger, Carl Egge and others who dreamed, labored and devoted their lives to its formation and advancement, surely equal credit must go to those intrepid aviators who from May 1918 onward performed the actual task of carrying the mails. The organizers are the generals, planning, working, seeking money and supplies, rising above temporary set-backs and disasters, while the pilots are the men in the front-line trench, bearing the brunt of the battle, risking and giving their lives to put through the designs of their commanders. And flying the mails is a battle, a constant, deadly warfare waged against an enemy with limitless resources, an enemy never completely conquered, that rises refreshed each day and flings new legions into the conflict. In the strongholds of the Alleghenies and the Rockies, the divisions of fog and

wind and sleet and snow lie ever in wait for the solitary winged invader. The infantry of the fog is countless; the artillery of the wind blasts down the forests and hurls the mail plane to destruction; Winter throws over its screen of snow and the blinded pilot, whirling in the dizzy circles of a spin, plunges to his death; ice coats the wings of the plane and weighs it down, until the motor, unable to bear the extra burden, becomes an ally of the enemy and dashes the ship out of control against some mountain barrier.

The pilots are the true adventurers. The heat of life runs quick in their blood and in the long battle they return day after day, coolly weighing their chances. For the mails must fly. In a world, sedentary and complacent, where most men tread a round from home to office and office to home, a world where adventure has fled from the casual touch, an orderly, safe world, this small group is set apart by an occupation wherein each departure bears the chance they may not return. Living in this fashion, at a nervous tension, they have developed a separate code, an attitude of disinterest toward their own dangers and daring. Their characteristics are those which belong inevitably to men occupied by a life of action and adventure. Flying the mail is a man's job and the traditions that these pilots carry on are the traditions of all adventurers since the first man, bored with the routine of cave and camp, built a raft of logs and set out upon some great river into the unknown distance.

II

In the archives of the air mail is treasured a letter. It was written by Captain Leonard Brooke Hyde-Pearson, who " pushed

the mails " from New York to Cleveland during the days when the future of the Service was decidedly uncertain. He wrote the letter, sealed it and marked upon the envelope " To be opened only after my death."

Fog drifted down the crooked, shallow valleys of the Alleghenies. Not very heavy fog, merely long, thin veils, unwinding, spreading across the tops of the pine and spruce trees, a delicate haze, turning the distance to blue, deceptively lovely. Captain Pearson's DeHavilland sped on toward Bellefonte. Minute by minute, the ceiling closed down upon him. The fog thickened, just enough to worry him a bit, but not dense enough to make him turn back.

Lower came the brooding sky, and Captain Pearson took to following the treacherous valleys, flying below the mountain tops. Now the fog began to spread and thicken, to rise in a white tide, brimming the valleys, lifting to meet the sky. Twisting and turning, Captain Pearson kept on, hoping desperately to get through before the fog shut down completely. It was like a mad race, between the hunted, roaring plane and the silent, obscuring fog; like a man caught by the swift Fundy tides, racing for the safe heights of the shore, watching with the cool desperate calculation of those who measure their chances of life, the edge of wild water lapping at his heels. So Captain Pearson watched the rising tide of the fog. Could he get through? There was a narrow passage ahead between the dim walls of mountains, a pale sluice-way of safety still open. He banked the ship vertically; shot into the trap. The fog closed in. He was caught blind between those known, but

unseen walls. There were no instruments in those days accurate enough to make flying in fog reasonably possible. The trap was sprung. Captain Pearson tried a blind turn. Trusting to his instinctive flying sense he banked, turned, straightened out—the ship was in a spin. Perhaps he realized it and could do nothing. Probably he never knew. He was found in his shattered plane after the fog cleared.

Then the letter addressed to " My Beloved Brother Pilots and Pals " was opened. It read:

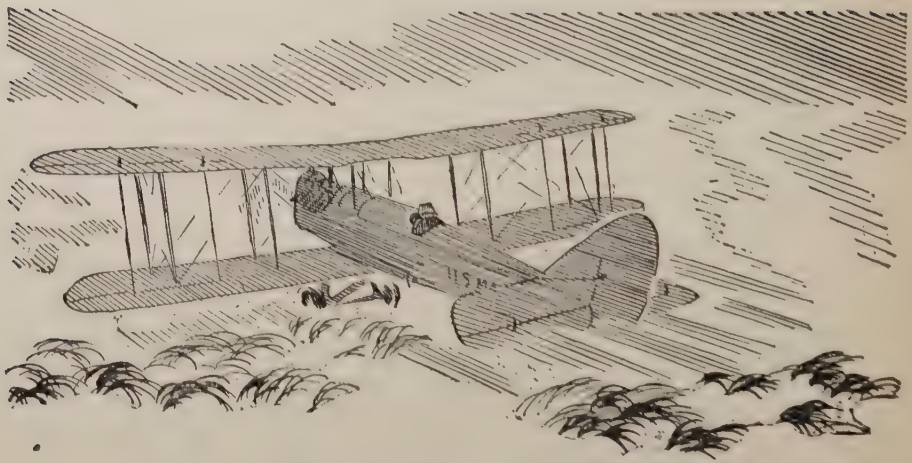
> " I go west, but with a cheerful heart. I hope what small sacrifice I have made may be of use to the cause.
>
> " When we fly we are fools, they say. When we are dead we weren't half-bad fellows. But everyone in this wonderful aviation service is doing the world far more good than the public can appreciate. We risk our necks; we give our lives; we perfect a service for the benefit of the world at large. They, mind you, are the ones who call us fools.
>
> " But stick to it, boys. I'm still very much with you all. See you all again."

So Pilot Pearson joined the ranks of the men who had flown the mail for the last time, but his message lives as a personal expression of the spirit of all the fliers who, alone and unaided, plodded ahead during those arduous, dispiriting years from 1918 to 1924.

III

The blizzard came howling out of the Uinta Mountains and

caught Pilot Lester Bishop's DeHavilland when he was only fifty miles from the security of the field at Rock Springs, Wyoming. Fifty miles! Thirty minutes of flying time! The snow came in an opaque wave; the bitter wind tossed the huge ship as though it weighed no more than the whirling flakes. The earth grew dim below, and the pilot, straining to see through caked wind-shield and goggles, knew he had to get down, and get down quickly. It required masterful maneuvering to land the bucking plane in that blizzard, but he sighted the plateau of Granger's Beach where the force of the wind had not allowed the snow to drift, came in fast, and settled without cracking even a wing-skid. On the ground the storm seemed lighter and Bishop hoped it might be one of those driving gusts that blow out quickly. He kept the motor running and waited for the wind to ease and give him a chance to take off and reach the field. Instead of breaking, the gale increased. Now the snow began to settle on the plateau, to gather in drifts, and the anxious pilot realized that soon it would be too deep to force the wheels of the plane through. He opened the throttle and began to taxi back and forth, trying to keep a path into the wind clear of snow so that he would have a chance to take off if the storm slackened. Up and down the plateau, the DH plowed, rocking and swaying in the surge of the blizzard, beating its way through the deepening snow like some gigantic bird, too exhausted to attempt flight. It was a heart-wearying business. By the time he had reached one end of the two or three hundred yard path and managed to turn the unwieldy ship, only a faint line showed where the wheels and tail had dragged the snow. But he knew it was his only hope, and persisted in this strange sentry-duty until the



UP AND DOWN THE PLATEAU THE DH PLOWED

snow reached such a depth that the motor would no longer pull the plane.

Then he drained the radiator of water to prevent freezing, covered the mail carefully and started to walk the twenty miles to Lyman. He took the compass to enable him to keep in the right direction. He had a recollection of having noticed a house at the foot of the mountain and decided to go down and try to secure aid. His flying suit he carried along for protection if he did not reach shelter by nightfall.

It was a herculean task to wade through the snow. In places it was over his waist. He soon found that he had over-estimated his strength and was beginning to tire. The hours of exposure had sapped his vitality. He set his teeth grimly and wallowed through the drifts. It was slow going. It would take him ten minutes to cover a hundred yards. Then he had to rest, gasping for breath,

before he tried the next hundred. The wind beat upon him, using up his strength, he fell, arose, plodded ahead, knowing if he ever paused that death was certain. He walked for six hours without a glimpse of habitation. Time no longer mattered. Distance had shrunk to the few feet just before him. Ten steps to the shelter of the next boulder. Ten impossible steps, for legs that ached and burned and threatened to collapse beneath him. Ten . . . Done! In the lee of the boulder he stopped, rested. But not too long. At the first warning of numb contentment, he had to start again. Fifty yards down the slant of the mountain face. The snow slid from beneath him. He fell and rolled. The effort to arise was almost beyond his power. In two hours he traveled barely two miles. Suddenly a strange sound broke the monotonous wailing of the storm. Bishop stopped, unwilling to believe his hearing. That was a Liberty motor roaring in the white turmoil of the heavens. Then he saw it, sweeping dangerously low, wavering and bouncing in the gusts. A DeHavilland. He staggered into an open space and waved his flying suit. The plane banked, climbed in a long circle and was hidden in the storm.

For a minute that stretched into eternity, Bishop stood rigid, waiting for the plane to return. Had it missed him? He knew how difficult it was to see anything as small as a man's figure, in the swift passage of a plane flying a hundred miles an hour. With the storm and the snow . . . The macabre wail of the wind filled the air. His hands dropped limply. That was all. He could go no farther. He was on a hog-back, swept bare of snow, and he sat down, gave up hope. . . .

Pilot Robert Ellis was Lester Ralph's companion flying on that

leg of the mail. He had missed the worst of the storm, beaten his way through the edge and was heading on for the landing field. Glancing down he was astonished to see Bishop's plane where it had landed on the plateau. He saw the propeller turning and concluded everything was all right. When he reached the field he put through a call to Salt Lake and found Bishop had not arrived. He was alarmed. Something was wrong. He rushed out of the office to where his plane was standing. Willing hands spun the propeller. With a mechanic in the mail compartment Ellis yanked his ship into the air and flew toward the place where he had seen his partner's grounded plane. Anxiously he peered over the rim of the cockpit. The snow had slackened considerably and objects were boldly outlined on the white surface of the earth. He flew for almost a half hour. Now he should be somewhere near. The spot was a familiar one. Then he saw the plane and dropped low, circling and descending. The propeller of the De-Havilland was still. Snow had drifted level with the lower wings. There was no trace of its pilot, and his footprints had long since been covered. Ellis climbed his ship again, pondering the matter. If *he* had been forced down at that spot what would he have done? Lyman was the nearest town. Yes, he'd try and make Lyman. But it was a long trek. Ellis knew the route between Rock Springs and Salt Lake City as well as most men know their back yards. Suddenly he remembered the house at the foot of the mountain. That's the place *he* would have made for. It was a hundred to one that Bishop had done the same. He flew as low as he dared while he searched the countryside and the mechanic, half out the forward compartment, watched every ledge and open space. Ellis

A MAIL PILOT DISCOVERS A WRECKED COMRADE

gave a whoop of joy. Below, on the bare ridge he saw Bishop's huddled figure. He landed the big plane in the narrow cleared space and in a moment Bishop's despair vanished in a broad grin. Ellis had put coffee and sandwiches in the plane and the food revived Bishop's strength.

But the difficulties were not over.

Ellis had landed safely but it wasn't possible to get the ship into the air. He put Bishop into the mail compartment and, while the mechanic lay on the lower wing, taxied through the snow for six miles until he found a place where he could take off. By this time the gasoline was dangerously low. They held a consultation and Bishop and the mechanic decided to walk to the farmhouse, now only a few miles away, while Ellis flew back to get gas. He made a beautiful take-off from the uneven, snow-covered ground, and started to gain altitude. Looking down he saw Bishop and the mechanic plowing through the heavy drifts; saw the weary sag of Bishop's shoulders and realized he would never make the farmhouse. Ellis never hesitated. Back he came, and landed. Although the extra weight was dangerous, and the gasoline supply low, he put the two men into the mail compartment and settled himself for the task of getting the plane into the air. He knew he must make it the first time. His hand shoved the throttle open. The Liberty motor gasped, roared full out, the propeller bit into the thin air of that high altitude, the plane staggered, lurched, swung forward. Ellis got the tail up quickly. The DH was coming to life. The wheels bounced over the uneven ground. It was getting light, but he was close to the end of the cleared space. Slowly he drew the stick back. The jarring impacts ceased. It

was free. The white earth dropped away. They were above the pines. He went up high before he tried a turn. Then with his eyes fixed upon the gasoline gauge he headed the ship for Rock Springs. The level of the marker column fell swiftly, but presently he saw, beyond the gnawed edge of the buttes, the dark patch of the town, the wide pale streets, and beside the winding, dark cut of Killpecker Creek, the tiny mound of the hangar and the wind-swept field. Down he came, with scarcely a drop of gasoline in the tanks. In a short time, parties were out to salvage the mail, and Ellis sat down to write a casual report of the " incident."

The fraternal bond of the air mail pilots goes deeper than mere human duty or obligation. It is as unswerving as the code of the sea, and at the word that a plane is missing every pilot within reach starts on the search, though the ceiling is down to the top of the hangars, or a gale laying the earth in waste. There are countless stories of heroism hidden in the brief reports of the men who rise unquestioning into the mad whirlpool of the storm when the message comes through reporting the non-arrival of a scheduled pilot.

IV

In February of 1929 Pilot Frank Barber reported out of Elko at 11: 50 in the morning. He was flying the mails and had, in addition, two passengers. At the Salt Lake Field he was overdue, and a check-up by telephone began. The only news came from a ranch, about thirty miles east of Elko. Pilot Al DeGarmo went up at once and searched until darkness made it impossible for him to continue. At the Salt Lake Field five pilots waited restlessly for

daylight. Their planes were on the line, ready to take off at the first gray edge of dawn. But instead of morning light, came a whirling snow-storm, with visibility scarcely across the field. Storms were reported all through the district to be searched. The five pilots climbed, silently, into their planes. The motors howled and in a few minutes they cut into the snow-filled air, were seen for a moment shadowy against the whiteness and then vanished. One of them was Pilot Robert Ellis, who had rescued Lester Bishop, two others were Pilots Vance and Boonstra, and both of them had been lost for two days in the same country. The other two members were Pilots DeGarmo and Maroney. They split into two parties for the search. The storm continued throughout the day. The canyons were blocked with fog and snow. The mountain peaks invisible in the clouds. Toward evening there was a sudden break in the storm above Secret Pass and the lost plane was seen, crashed about five hundred feet below the peaks of the ridge of mountain. The darkness was coming with the rapidity customary at high altitudes. The searching plane swooped over the wreckage, and in the momentary glimpse the pilot had, he saw the figure of one man, upright and waving. What had happened to the others he could not tell. There was no place to land near the wreck and he decided to return to Elko for help. Banking steeply, he headed toward the field where he reported the discovery. Instructions were given by telephone to rescue parties made up of ranchers who lived near the Pass, and eight men started at once up the mountain. At the Elko Field, bundles of blankets, food, hot coffee, first-aid kits and supplies were made up, fastened to small parachutes and loaded into the mail planes. Back went the pilots

through the darkness to drop these supplies to the survivors of the crash. It was night, now, and some plan had to be devised to let the marooned fliers know of the parachutes. A flash-light was fastened to each bundle and as the planes zoomed over the ridge, the flash-lights were turned on, and the bundles tossed over. The parachutes descended slowly, the lights swaying and gleaming in the dark. Unfortunately the passengers, not understanding the scheme, thought the lights were merely signals to let them know help was at hand and did not bother to investigate further.

At one o'clock the rescue party succeeded in reaching them. The two passengers were unhurt and suffering only from exposure and a forty-hour fast. Pilot Barber was still unconscious. A fire was built and food and warm clothing provided. Meanwhile the blizzard had begun again and, carrying the unconscious pilot, the rescuers began the six mile trip to the nearest ranch. It took nearly six hours of exhausting toil.

Pilot Barber was still in a stupor. A doctor was flown from Elko Field to the landing point nearest to the ranch house. The three men had been brought down on a sled, and were taken by car to the railroad, and then by train to Salt Lake City. The passengers recovered quickly, and Pilot Barber, while badly injured, also recovered.

The brotherhood of the air mail had again proved its loyalty.

V

In the November darkness the Cleveland to New York mail plane was howling eastward. Aloft, it was cold, but the weather

held open and the air speed indicator clocked a smooth hundred miles an hour. Pilot Thomas P. Nelson, flying the ship, watched casually the steady passing of the beacon lights below. There was a high ceiling and he was thankful, remembering, perhaps, the time when he had come east from Bellefonte through one of the foggiest nights on record. Then he had been cut off from the earth. The fog swallowed every beacon. It lay dead and thickly white over the mountains, and he stayed above, in a turmoil of cloud, and wind and rough air. The thin invisible thread of sound from the radio-beacon at Hadley Field was his solitary link with the earth, and he watched the instrument board with an aching intensity, while through his head-phones came the steady flicker of the signals upon which his safety depended. Presently he heard the dot-dash and knew he had swung to the left of his course. Slowly he worked the ship back, every movement of rudder and stick carefully checked by the indicators shining softly on the blackboard. Now the steady flow of dashes came in clear and he stopped the swing of the plane to the right, held steady. A gust of wind rocked his plane violently. The compass spun momentarily, the ball in the turn indicator slipped over to the right. The plane was turning. The radio signals began to sound dash-dot. He corrected the movement, picked up the course, flew on. It was exhausting flying, and he hoped, without being optimistic, for better conditions when he had passed over the mountains, but the fog hung all the way to the sea. He had to trust absolutely his instruments and the radio. The minutes dragged interminably. Presently he knew that he ought to be near the field. The radio was loud and steady. He came down, as slowly as possible, seeking

an opening. Fortune was with him. Through a rift he caught the flash of the revolving beacon. Not so bad now. He knew exactly where he was. There was no chance of finding the wind direction, but it didn't matter for there was scarcely a puff. The fog thinned. There was a few hundred feet of ceiling over the field. He landed easily. . . . It might have been different. Air mail pilots cannot bother over the "might have beens." They have to take conditions as they happen. The mail was in safely. Nothing else was important. . . . Queer things occur in the dark miles from Hadley to Cleveland. A chap has to be on the lookout most of the time. . . . Nelson caught a glimpse of the beacon light on the Ringtown emergency field as it slid under his right wing. Not bad, tonight, though. Ought to arrive right on the dot. . . . He jerked upright. A streamer of bright flame slashed the darkness over the nose of the plane. Fire! Dread enemy of the flier. His hand automatically jerked the extinguisher from its rack. He twisted the plunger, yanked at it, but it refused to move. It was frozen. Now what? He reached for the buckle of his safety belt and realized at the same time he did not dare "bail out" and leave the burning plane at that point. Across his mind flashed an image of the country below; a village, scattered farms, the ship might plunge into a house, set it afire, kill someone. . . . The fire was increasing. He had turned back toward the landing field; now he swung the burning ship over toward the mountains. Coolly he watched the ground till he saw an open space. Then he set the controls and headed the plane for the clearing. He stood up and leaped into space, his hand holding the parachute ring. He

pulled the cord and the 'chute snapped open. Below him he saw the burning plane falling like some ruddy comet. Guiding the parachute, he managed to land near the wrecked ship. The mail must be saved if possible. He jerked off the harness and ran toward the blazing mass. By tremendous exertion he managed to get out five bags of mail. . . . Strange things happen in the darkness above the graveyard of the Alleghenies. Solitary, the air mail pilots face them, depending for success upon the coolness of their judgment, the stoutness of their hearts, and the skill of their hands.

These things Pilot Nelson did in line of duty. He protected the people below him, risking his own safety; when this had been done, he endeavored to save the mail, and succeeded beyond human expectation. A month later he died "in line of duty"; brought crashing to earth in the lonely battle every pilot wages with his eternal enemy, the weather. When the news came through that his plane was missing, every man within reach took off in the storm, seeking him. For the bond of the air is a steadfast one, and as one pilot said: "They're good fellows; they never let you down."

VI

In earlier days, before instrument flying had become practicable or accepted, air mail pilots hunted their way, "hedge-hopping," picking their own routes; "pushing the mails" on wild plunges along valleys and up river beds, getting through in some way, anyway. Now it is different. They have learned to trust the waver-

ing gauges on the board before them; they have learned to fly high and straight, listening to the thin voice of the radio-beacon, and the directions broadcast by radio-telephone from the men on the fields toward which they are flying. The hedge-hoppers do not last long; eventually some unexpected obstacle arises, and with fifty or a hundred feet of altitude there is no time to choose, the crash is inevitable.

When the night mail first crossed the Alleghenies, there were none of these modern guides. The pilots " flew under " and often fog arose and clouds descended until they were trapped.

R. G. Page was flying the mail from Hazelhurst out to Bellefonte. It was his second trip over the route and he took off under a clear sky, picked up altitude and headed west. The earth spread below him, slightly hazed by the smoke from factories as he passed across the manufacturing plants of northern New Jersey. Good flying weather, he thought, and settled back, letting the DeHavilland surge along the quiet air, noting automatically the steady drum of the motor and the indicators of oil, water, gasoline and tachometer.

Presently, as he neared the mountains, he saw fog spreading along the horizon, blurring the wooded peaks, rolling down into the valleys. He had been flying for about an hour, and the sky was so thick ahead he decided to turn south over Easton, Bethlehem and Allentown, pick up the silvery path of the Susquehanna River and follow it between the mountains.

Here he had the choice of three routes. He could go through Woodward Pass—always a dangerous way; or he might swing up the river with his wheels just clear of the water to Lock Haven and

then down the Valley into Bellefonte; or he could locate a railroad near Sunbury by a group of little islands, and wind through. "But that's an awful course, if you're flying a DH4," he said. "You haven't more than fifty feet to spare on each wing, and have to bank seventy degrees to make some of the bends."

Nevertheless he went in and soon found the fog thickening. It boiled around him in waves of dense wet mist. At moments his vision was limited to the spread of the wings. He was beginning to worry. Presently he became confused. Was he flying north or west or south? The fog hid the horizon and the compass was spinning. Just as conditions seemed impossible, he hit an opening and went down, as cautiously as possible, to find out if he could, where he was. Being cautious at one hundred miles an hour is difficult. He came out of the upper fog and caught a flash of dark trees below. Instantly they vanished. The fog had swept under him. It was useless to try to get back upstairs. He knew he was well below the tops of the mountains. If he tried to climb or continue flying the chances were his plane would crash wide open upon the side of the mountain.

"There was nothing to do—I was in for a crash.

"I held her nose up and let her settle,—and things began to happen."

Out of the murk appeared the dark, tall shaft of a tree. For the fraction of a second he saw it, hurled like a spear toward him. Even before his mind had carried the message to his tense muscles, there was a ripping of wood and canvas and the tip of the right wing vanished as though slashed away by a giant knife. The plane reared, side-slipped, falling parallel with the mountain. A

THE PLANE STRUCK

patch of ground spun into view; a black shadow gone suddenly crazy and standing on end. The whole world was out of focus with the careening plane. He saw the trees for a moment rushing by above him as the ship fell sidewise and the mountain rose like a black wave crest at an impossible angle. With the coolness of a trained pilot, he reached forward, cut the switches and ducked his head.

The plane struck.

It slashed through the tree tops with a cracking of struts and shredding of fabric, hit the solid ground with a thud and plunged into a wire fence. Posts and wire wrapped about the landing gear, but the DH, still slithering along the open space at fifty miles an hour, bounced into a ditch, reeled out and headed for a tool house at the edge of the field.

" There was another crash, but I was on my way, leaving my wings behind me. Then I rolled still tangled up with the fence. That was all.

" I gathered up the mail, had a smoke and wired to Bellefonte."

Pilot Page's report to Washington of the adventure was made up of twenty words:

" Page crashed at eight-forty. Account of no visibility, fog being right on the ground. Ship a washout. Pilot unhurt."

VII

A mechanic was cleaning grease and grit from about the mechanism on the tail of a Boeing mail plane that had just come in. Gasoline under pressure was being sprayed from a long nozzle at the end of a hose, and it washed clean the accumulated dirt.

" Yea," he said. " I been in this game since the war, and I've been with the mail for eleven months. They're a good gang these pilots. Once in a while they get touchy, but who wouldn't? I don't always feel cheerful, every day, myself. They're good fellows to work for and flyin' the mails ain't no snap. They get some queer breaks, too. There's Harry Brown, for instance. He holds the record for the run from Cleveland to Hadley. Made it in two hours and ten minutes. That's an average of a hundred and eighty-two miles an hour. Well, just about a month ago he had a queer one. These ships have two wing tanks for gas. One was getting pretty low so he switched onto the other. The motor coughed and spit and went dead. He was over some pretty bad stuff, fog and thick clouds that went right down to the ground. There wasn't

anything to do but step out. This is the way I heard it. He went over the side and pulled the ring. His 'chute opened nice, and there he was floating down. Well, just then he heard a roar and there was his ship, with the motor going full blast and nobody in it. Would you believe it? She was absolutely dead, and all of a sudden there she was, running as pretty as you please, and shooting empty in a big circle. There wasn't anything he could do. He couldn't get back. And the crazy bus began to run rings around him while he was swinging at the end of his 'chute. Maybe you noticed how the props on these Boeings keep on turning after the motors are shut off. Well, they do. And I guess the wind kept whirling the prop, and the gas came through, and she took hold. It wasn't a good place to be. The plane went around and around and every time Harry thought she was going to smack right into him. But she didn't and he got down safe. . . . Queer one, wasn't it? "

VIII

The reports turned in by the pilots are often humorous and even the most casual contain, between the lines, the story of dangers that have been met with level-headed courage. The report of Dean Smith, who left the Mail Service to be one of the pilots on Admiral Byrd's South Pole expedition, has become a classic. After a forced landing he wrote:

" Dead-sticked—flying low—only place available—on cow—killed cow—wrecked plane—scared me—Smith."

And Pilot Kenneth Unger's report of a forced landing runs a close second:

" I was crossing the Rubbie Mountains one day at about 10,500 feet when I broke a set of gears and landed in a very small field in the Secret Pass. A rancher riding range saw me land and rode over and let me take his horse to ride to the nearest ranch.

" After phoning to Elko for help, I started back to the ship on horse. I started to mount and the horse took off in a climbing turn before I got in the seat and had my safety belt fastened.

" To make a long story short, I over-controlled her nose, went down and I spun—or side-slipped, I don't know which—into the ground at great speed.

" I broke my left ankle and was well shaken up in my second landing.

" After filling the air with smoke for a few minutes, I got the beast again and we took off in a gentle loop and returned to the ship. Help came. We repaired the motor and I flew the ship to Elko. There I had the ankle set by the best doctor in town.

" I had to borrow a pair of crutches made for a man six foot tall and as I am five foot seven we got along fine. I had the boys at the field tack a strap to the right rudder bar so I could pull as well as push. This made up for the loss of my left foot. I took off for Salt Lake with the regular mail as usual.

" Motto: Always be sure you have your safety belt on before you take off with a western horse."

IX

Emergencies! The sudden wholly unforeseen moment when the air mail pilot is confronted by a new and bewildering situation;

when his life depends upon an instantaneous solution of some condition that has never before arisen. Split seconds in the air separate success from disaster, life from death. The plane is howling along at two miles a minute. Something happens. The pilot must act at once, decide what should be done, do it, and stick to his decision. Second thoughts are nearly always fatal. The first choice *must* be the right one. The pilot who uses bad judgment rarely has another opportunity.

Pilot Paul Collins took off from the long narrow field at Bellefonte pushing the eastbound mail plane. The night was clear but starless; the earth a smudge below. He pulled up to three thousand feet to pass over the mountains. Everything was going nicely. The motor roared its reassuring song against the cotton-wadding in his ears. He anticipated a quick, uneventful flight, and eased back, made himself comfortable.

Suddenly in the black space ahead loomed a monstrous shape. It seemed to fill the entire heaven. Vast and ponderous it floated across his path, some spectral phantom of the skies. He gazed at it with amazement. Then his hand yanked back on the stick; he shoved the throttle wide open, and the plane gave a leap, zoomed frantically and passed over the strange apparition. Only then he saw a line of lights below the ghostly shape and realized he had almost crashed headlong into the Shenandoah, out on a night practice cruise. The thunder of the motor in his plane had drowned the sound of the engines in the dirigible. The angle of his flight had prevented his seeing the lights in the cabin. An emergency that would happen once in a hundred years of flying. Before he had realized clearly what his astounded mind had failed to grasp,

his judgment had been made. Not around or under, but *over* this startling, unexpected obstacle in the sky. Over he went, leap-frogging with the Navy's ill-fated dirigible.

Pilot Leonhardt was sailing along at four thousand feet. Blue sky, fluffs of cloud, scattered sunshine in patches over the hills and fields beneath. A little wind but not enough to bother. Everything jake. A good life, pushing the mails. Just sit around on top of the world and watch the automobiles crawling like beetles over the dusty Ohio roads. Oh, boy, think of being down there sweating in the heat, eating the dust of the car ahead, breathing the fumes of burned gas, dogging along at a miserable thirty miles an hour. Or chauffeuring one of those five ton trucks that smack your backbone up into your skull, tear your arms out at the sockets, and rumble up to twenty, wide open. No thank *you.* Cool here, with plenty of space, good fresh air and no red lights to tell you when to stop, or cops on motor-cycles to take your number if you go too fast. . . .

A wandering gust of wind tilted the plane. Automatically he shoved the stick across. There was a snap and the stick swung loose in his hand. A pin had sheared away. For a moment or two the plane flew level while the pilot searched frantically for something to use in place of the broken pin. There wasn't a bit of metal in the cockpit. Then the ship dove wildly and began to fall out of control. It came down, slipping and reeling. A sudden lurch slung Leonhardt forward and a little gold pencil bounced out of his pocket onto the floor of the cockpit. He snatched at it, shoved it into the place of the broken pin, and by a miracle it fit.

Although the pressure of the stick crushed the soft metal of the pencil, it held until he could bring the ship under control and land safely. In his report he wrote:

"We ought to have those blamed control pins strengthened. I can't afford to waste a good gold pencil every trip."

Good judgment; the cool quick thinking that averts impending disaster.

Pilot Robert P. Hopkins of the National Air Transport in December, 1929, was awarded the $100 prize given monthly by the *Chicago Daily News* for the most meritorious or heroic performance of an air mail flier.

In the murk of bleak mid-winter he was flying from Chicago to Cleveland with a heavy cargo of mail. The Christmas Season was on and every plane groaned with the burden of letters and packages. Slowly the fog moved in from the Great Lakes. He flew high, hoping to be able to pick an opening when he reached the field and get down safely. The fog was relatively thin at his level and he had no unusual difficulty in keeping a course or holding his ship steady. When he reached Cleveland all he could see was a solid layer of fog obscuring the earth. He went down into it, but there wasn't an opening. Returning to the relatively clear upper air he circled for an hour, seeking to find a lane which would lead him to the earth. Suddenly the fog opened. As though by magic the pale curtains separated and he glimpsed the Lake shore and a tiny patch of lawn. He never hesitated. There might never be another chance before the gas tanks were empty; or again, the fog might drift away in ten minutes. But there it was, a patch of level

ground, so small it looked no larger than the palm of his hand. Instantly he weighed all the factors, and decided. Along the rifted fog bank he hurled the huge plane. There was the lawn. Fearfully small. He couldn't land at less than a mile a minute. Those heavy mail planes roll a considerable distance. He flattened out at the last minute, stalled, and felt the wheels touch. The ship lunged across the lawn, slowed, and stopped right at the far edge. The fog closed down solid.

When the weather lifted it was seen that the place where Pilot Hopkins had landed was so small the plane could not be flown off. The only way it could be gotten out was to dismantle the wings and tow the fuselage away with a motor car.

X

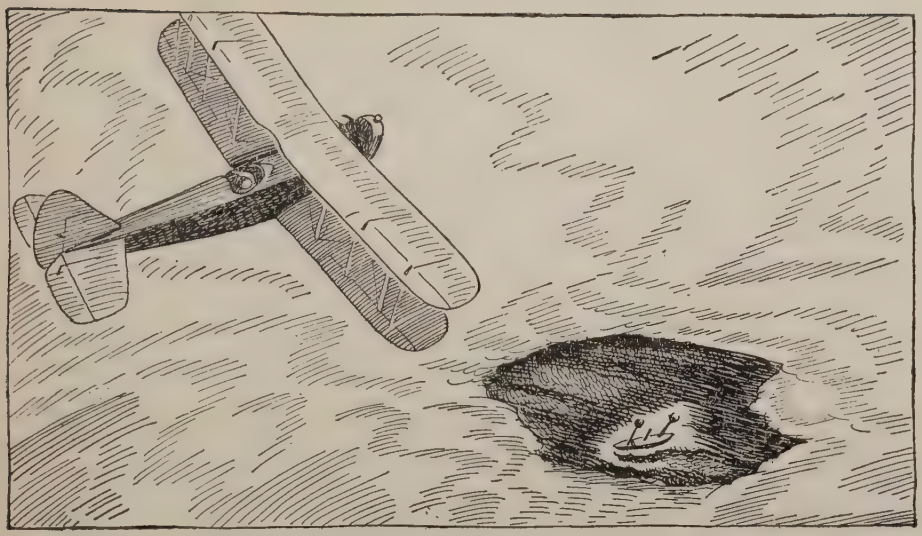
Chance, of course, plays a part in the fortunes or misfortunes of the air mail, but a good pilot usually "carries his own luck." Still there are moments in the daily routine when some extraordinary ending comes to the adventure.

The northbound plane on the Atlanta–New York mail route had just taken off at Atlanta. The night was what the pilots call "dirty weather" and the plane had hardly left the field before the pilot found himself in a dense fog. He kept on, watching his altimeter and when he had sufficient height leveled away on his course. Suddenly a patch of dark ground appeared in the mist. It was only a few feet beneath the wheels of his plane. He was astounded. He should have been several hundred feet in the air, safely away from the earth. "The altimeter's gone haywire," he

thought, and came down hastily to find out what was wrong. He climbed out of the ship and gasped in amazement. He had landed on the flat top of Stone Mountain. Had he touched any other place he would have run over the edge and crashed. Or, a few feet less altitude would have smashed his plane wide open into the mountainside.

Of course if he had hesitated when he saw that sudden patch of earth, the result might have been different. Part of his luck he made, but it was only by chance he was high enough to clear the mountain, and was in the one favorable spot for a possible landing.

Another flight in which the same combination of chance and the instant seizing of the solitary opportunity was one of Wesley L. Smith's regular trips with the mail east from Cleveland. From Bellefonte he had encountered the usual bad weather which has made those two hundred miles the most dreaded section of all the twenty-six hundred miles of the transcontinental mail route. Fog and storm and a beam wind had drifted him far from his course. There was no radio-beacon then and he had never a sight of the ground to check the distance the winds had blown him sidewise. He had given up trying to follow the erratic whirling of the compass, and kept doggedly on, hoping to find a break in the gray pall and catch a view of some point that would tell him where he was. Each minute dragged by, tense with anxiety. He knew his general course was east, but whether he was north or south or west of the field was utterly impossible to estimate. He might have flown beyond it. The fog stretched in an unbroken wall across the sky and all his efforts to get under it had failed. As far as he knew it



HE SAW THE STUBBY HULL OF A LIGHTSHIP

rested upon the ground. All he wanted was one instant when he might glimpse the earth, for he knew every barn and house, each mountain slope, every river or town or railroad, could almost recognize the individual trees and telephone poles. Every air mail pilot has that faculty. His route is so familiar that he needs only a flash of a red roof under the edge of the wing, to know exactly where he is. Often his life depends upon his ability to recognize instantly the shape of a particular corn field, or the junction of two lines of railroad. Pilots like Jack Knight, can come down after hours flying above the clouds and know almost any spot in all western Nebraska. To the development of this faculty many pilots owe their lives.

Wesley Smith was one of the oldest pilots, in point of service, flying the mails. He had begun on the New York–Washington

route in 1918 and had flown steadily. He was known as a lucky pilot, but most of the time he made his own luck.

On this particular day his good fortune seemed to have failed him. For an hour and a half he flew by instruments. He realized that he must have gone beyond the field and should be approaching the Atlantic Ocean. There was nothing to do but take a chance and come down before he got too far out to sea. At that moment he was given his one chance. The fog opened. He saw a thick oily patch of gray green water and the stubby hull of a lightship wallowing in the swell. Instantly he knew where he was. The fog shut in, but he had seen sufficient. He turned and headed back and landed safely on Long Island.

XI

Twelve years of the air mail, and the roster of the pilots contains only a few names carried over the dozen years. From twelve army aviators who poked the Jennies across New Jersey, Pennsylvania and Maryland, the service now lists two hundred fifty pilots. Many met the lonely and heroic rendezvous with death; others have retired, some have changed to executive positions in the Air Mail Companies, or with manufacturers of airplanes. Wesley L. Smith is Division Superintendent of the N. A. T. at Cleveland; Ernest M. Allison who pushed the blunt nose of his DH4 through many a Nebraska blizzard is Field Manager at the Cheyenne station.

Of the pilots still slinging on parachutes and climbing in the cockpits of mail ships, E. Hamilton Lee is the veteran with more than a million miles of flying. Many pilots have over five

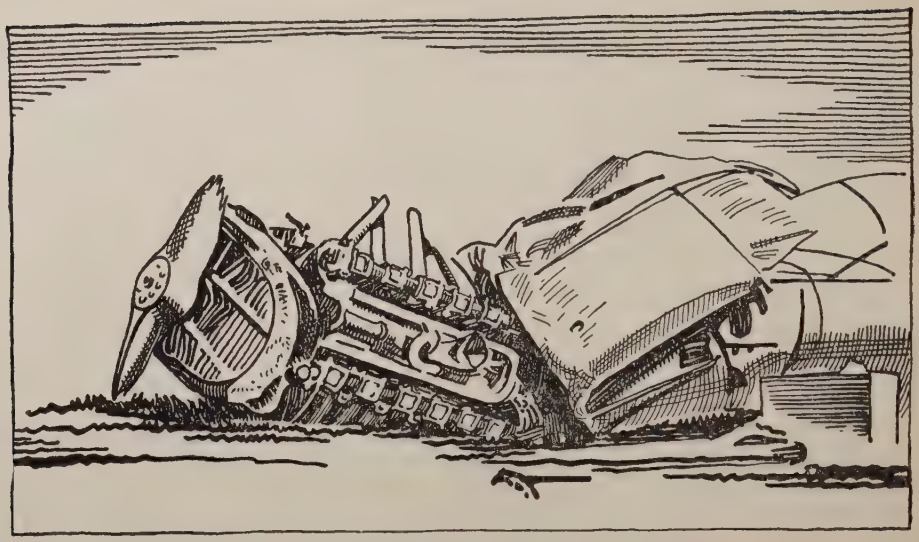
thousand hours in the air, and their names occur again and again upon the pages of the air mail record:

Jack Webster, who flew on the New York–Washington route and carried the mail, during that momentous night and day in February 1921, from Chicago to Cleveland after Jack Knight had brought it all the way from Omaha.

Harry Brown and Dorsey Askew who cross and recross the treacherous miles between Hadley Field and Cleveland; Lawrence Garrison; Paul Collins, who used to get out of his plane and kick it when he had encountered particularly bad weather; R. L. Dobie and Warren Williams and Frank Burnside, are all flying under the red arrow of the N. A. T.

Lester Bishop has long passed the five thousand hour mark, and there are Eddie Allen, Harry Huking, Claire Vance, Frank Yager, Jimmy Murray, Paul Scott, all veterans of the service.

Day after day these pilots have taken the mails through, sometimes as Frank Yager did when the ceiling came right down to the ground, and he taxied fifty miles. Whenever he came to a fence he " gunned " her over, and continued his bumping cross-country roll. Danger rides on each flight. Only a year or so ago Harry Boonstra and Claire Vance, pilots who know every ridge and boulder of the western mountain ranges, were lost for two days. Scarcely a mile of the whole transcontinental route but has had its story of adventure, courage and hardship to tell. Against the sheer wall of Table Mountain, Pilot Chandler was hurled when a down-draft of air sucked his plane like a feather out of the air and left him stranded on a slope so steep, pilot and mail had to be drawn up on a rope let down from the ridge above. Upon the



MAIL PLANE WRECKED BY CYCLONE

brooding waste of the Laramie Range Jack Knight crashed, and Jimmy Murray caught in a sudden blizzard had his plane ripped to pieces in the pine trees, and struggled for a night and a day through two feet of snow to a town. After that he never flew in winter without a pair of snow-shoes in his plane. At Chappell, Frank Yager had his ship literally shattered to bits by a cyclone. In his report he wrote:

" My intention was to keep my balance and clear of the ground. It didn't last long. Found myself sitting on the prairie clear of the ship, with a terrific wind blowing from the west, exactly opposite to its direction the minute before. All I could see of the wreck was the lighted cockpit turned toward me. Didn't feel any effects of being hurt, so I groped for my flashlight in the cockpit, turned out the lights, and stumbled down the hill to the beacon-

tower. I regret to report that the plane is one of the most thoroughly wrecked aircraft I ever saw."

East and west and south and north are these mute battlefields, witnesses of strange happenings. Johnny Eaton, forced down in the Nevada desert, was without water. He drank some from the radiator of his plane and when found was in agony, having been poisoned by the water. After that pilots carried canteens with drinking water. Over Ohio a bolt of lightning stunned Pilot Harold L. Knoop. He was knocked unconscious and when he came to could not see. Just as he prepared to leap from the plane, his vision returned and he flew on, landing the mail safely at Chicago.

The pilots of the air mail take the weather as it comes. "It's our job," said Pilot Haas, who pushes the N. A. T. ships from Hadley to Cleveland. "We're in it because we believe in aviation; because we'd rather be in the business of flying than any other business."

A job, certainly, but a man's sized job and no place for the half-hearted enthusiast. An air mail pilot must believe in his profession of flying, with a depth of conviction that absorbs him completely. Individual as they are, they are fundamentally the same in their belief in flying. Untiringly, enthusiastically, they labor for the cause of aviation. They are young men with a vision. Aviation holds them as the sea casts its spell upon the sailor.

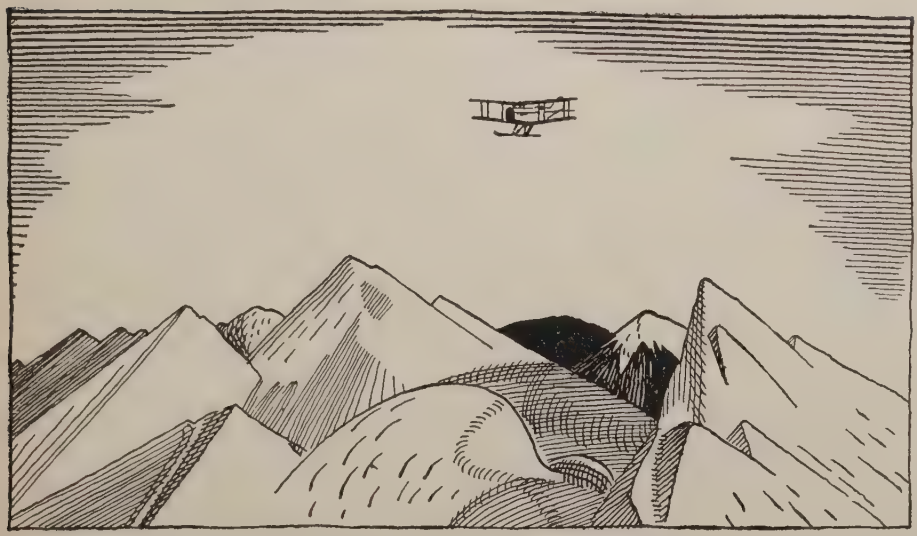
XII

One of the great names in the history of aviation is Carl Ben

Eielson. He was probably the one pilot who devoted his life, and finally gave it, to the advancement of flying amid the snow-bound wastes of the upper world. He knew and loved the north, recognized its treachery, gave himself to its snow-hooded beauty. The blood of northern races ran in his veins and he devoted his career to piloting airplanes over the barren mountains, the tundras, the ice-fields and glaciers on the top of the world. There he achieved his greatest exploits as pilot for Captain Wilkins, and there he met his destiny while flying to rescue the crew and cargo of an ice-trapped vessel.

In February of 1924 the Post Office Department sent a standard DH4 Air Mail plane to Fairbanks in Alaska to be used in carrying mails. Carl Ben Eielson was the pilot. The ship was set up and rigged on the twentieth of February and the next day Eielson took off. There was three feet of snow on the ground and the temperature registered five degrees below zero. Surely the mail had never been flown before amid such surroundings. In the cockpit was one hundred sixty-four pounds of mail. Eielson took with him food for ten days, a mountain sheep sleeping bag, five gallons of oil, snow-shoes, a gun, an axe and spare parts for minor repairs.

The entire population of the town came to the field to see him off. The motor was warmed up, and Eielson, warmly clad, took his place in the cockpit. The plane was equipped with skids instead of wheels, but even these sank a foot below the surface of the snow. He opened the throttle and the wash of the propeller sent the light snow in a hurricane from under the tail. Shuddering the DH pulled forward; he got the tail up and the wings began to take hold. Gradually the speed increased. Now the skids



EIELSON KNEW THE COUNTRY

were slithering on the crest, and the plane rose into the bitter upper air, gained altitude and vanished into the distance.

Eielson knew the country as well as anyone. For fifty miles he followed the Taconta River. Here he took on gas and oil and sixty pounds of mail, while the inhabitants gaped at the plane.

Dusk comes early over the northlands. Momentarily he had forgotten that. By five the darkness had set in. He took off for the return about quarter of three. Swiftly the night swept across, and the earth became a vague glimmer. He realized that he was off his course. Already he had flown an hour longer than the trip out had taken. He kept on, peering down into the gloom for some spot he might recognize. The night was clear, and for that he was thankful. The enormous stars seemed to hang just above his

upper wing. Nothing looked familiar. He went up higher hoping to see the reflection of the lights of Fairbanks upon the distant horizon. Nothing! The black arch of the sky, mounded like a gigantic igloo, lay unlighted over all its vast space. The Liberty motor thundered, and the pale violet flames at the tip of the exhaust pipes flickered and shone upon the cowling. His eyes ached from the strain of constant watching. The empty distance began to impress its enormity upon him. A lonely, desperate land where man clung grimly to its inhospitable soil; a land of violence, of mystery and terror; a brooding, sullen land, ripped apart by mountain ranges, cut and torn by valleys; thousands of miles where only the snarling wind ravaged the unseen grandeurs. Men toiled across its mountain passes, and died trapped by sudden blizzard. Why, it took dog teams thirty-five days to make the journey he was flying in. . . . "Well, he wasn't back yet," he thought grimly. Thirty-five days, of steady slogging; breaking trail, hauling and lifting, facing the thin rasp of the wind. His DH had flown half the distance in two hours and fifty minutes. Flying was the thing up there, on the roof. He could hop a mountain range in fifteen minutes that took men three or four days of back-breaking struggle to cross. Yes, the airplane was a marvelous thing. It was a live thing, that wide-winged ship, something comforting and companionable; men who flew felt a bond between themselves and their ships, the affection of dangers shared and overcome. . . . In the dark below, his restless glance caught a pin point of light. He banked abruptly and spiraled down. Presently the yellow speck showed as a square of lighted window; he could distinguish the blurred heap of a trapper's cabin and near at hand the vague

pathway of a frozen river. He smiled in satisfaction, knowing where he was. There was no place for a landing, but there was sufficient gas in the tanks and he climbed again and set a new course. Presently a glow appeared in the distance. Flares of gasoline had been lighted on the field at Fairbanks. He landed, but the field was in such bad condition the DH cracked a skid, nosed over and shattered the propeller, but the first mails had been successfully flown in Alaska.

Afterward Eielson made the round trip every ten days, until he left the Air Mail Service to pilot Captain Wilkins' ships on his first airplane explorations across the ice fields of the Arctic Ocean.

XIII

Fog is the constant terror of the air mail pilot. In spite of all the talk of " blind flying," so little is really known about it, the difficulties it presents are so tremendous and the complications that arise so varied and instantaneous, that all pilots dread the moment when not only the earth is hidden but they lose all sense of which direction is up and which down. In newspapers, particularly, when recording spectacular long distance flights, the report often has some such sentence as " they flew blind for five or six hours." Probably all such statements are untrue. The popular conception of " flying blind " is being unable to see the ground. This condition is not " blind " but flying on top of an overcast and causes the pilot little concern. He can tell where the ground *is;* he has a horizon to help him keep his ship level and he can plow along, until a break occurs beneath and then come down.

But when the world has changed to a gray obscurity, colorless, impersonal, unending, danger arises and the pilot finds himself trapped in blankness. Now his instincts are not only of no value, but absolutely misleading. He cannot tell if he is in a turn or flying straight. If he has been swinging slowly to the right for some time his sense of balance is disturbed, a new adjustment takes place in the fluid of his ears. Balance is maintained by this fluid and the pilot's vision of the horizon, which the brain interprets to tell the position. Instruments serve as a mechanical horizon for the eyes by which the pilot can keep upright. This tells him he is no longer turning; the ship is going steadily ahead. In reality he is continuing to turn. If he should attempt a movement which would accentuate this turning, he might stall at once and go into a spin. Or the sensation might be of turning to the left when actually the plane was still swinging right. Then, the pilot acting upon the direction of his senses, would probably overcontrol to the right.

Sitting before the hangar of the N. A. T. at Hadley Field, Pilot Charles W. Haas said: " My flying in the Army taught me to trust instruments rather than what my instincts told me. I was put blindfolded into a revolving seat and turned rapidly to the right. An instructor said: ' Which way are you turning? ' I answered, ' To the right! ' The chair was revolved slower. ' Now which way are you turning? ' ' Right! ' The chair was slowed down still more. ' Now, what direction? ' I said, ' To the right.' After a moment he asked again. I replied, ' I'm not turning.' He said, ' Now, how are you turning? ' ' To the left.' The bandage was taken off and I was still *turning to the right.*"

On the concrete apron, a mechanic was cranking the inertia starter handle of a long cylindrical Boeing 95 mail plane. The motor caught with a sputter, began to spin lazily. Deep in the throat of the exhaust the heavy mutter of the engine sounded metallic and insistent. The pilot leaned his head attentive to the sound of the explosions. The propeller rasped through the air with a thin wailing. Twirls of dust spun up at the edge of the concrete and rushed in miniature cyclones across the grass.

" Instruments today aren't all that could be desired," he continued, " but the pilot *must* trust them. The period of hedge-hopping the mails is finished. In bad weather we go up high now and stay there until it's time to come down. Every pilot should be able to fly by instruments and must teach himself to do it. It's difficult enough at best. Your ship is traveling a good hundred miles an hour. Something happens. The air is rough. A gust throws you off. Instantly the instruments record what has taken place. The pilot interprets them and makes the corresponding correction to bring the ship back to normal flight. Here's where the trouble comes in. The three things do not occur at the same second. The ship acts, the instruments act, and then the pilot acts. Although the pilot does what he should as soon as possible, still there is a lapse of time before his brain can interpret the dials and his muscles respond to the message. By then the ship may be in a totally new position, and if the pilot has not reacted correctly he may do absolutely the wrong thing.

" Blind flying? " he went on. " Oh, yes. Every pilot encounters moments of blind flying occasionally. That's where the interval between the movement of the ship and the action of the pilot

enters in. To fly blind, in rough air, depending absolutely upon your instruments requires the most concentrated thinking you can imagine. You are always two moves back of the plane. You *can't* catch up. You don't dare anticipate. You might be right—and, again, you might be wrong. After a little while the strain of such intense attention tires the pilot. He falls further behind in the game of ship, instruments and pilot. Then things begin to happen." Before he realizes it the ship may be out of control. The first time he gets it back. He becomes really worried. The fog gives not the faintest indication of direction. He forces his weary mind to follow the arrows on the dials. Altitude, turn, bank, climb, air speed. Each one has a part in the control of the ship; each one must be read in relation to the others. Above them the smooth dark glass of the compass adds to his problem.

Pilot S. J. Samson of the National Air Transport was taking the mail from Cleveland to Chicago on March 22, 1929.

In his report he wrote:

" Left Cleveland at 7: 05 A. M. Central time, with the night New York (mail), headed for Chicago. The weather reports available before departure read: ' Toledo—Ceiling 900 feet, visibility 1½ miles; Lakeville, 1,400 feet; Wolcottville, 800 feet; Chicago, 600 feet. Rain stopped and weather unsettled.' From these weather reports, although the conditions were poor, it was possible to get in. Cleveland weather was good, but the ceiling from Lorain to Oak Harbor was low. Passed over the Toledo Field at 7: 55 Central time."

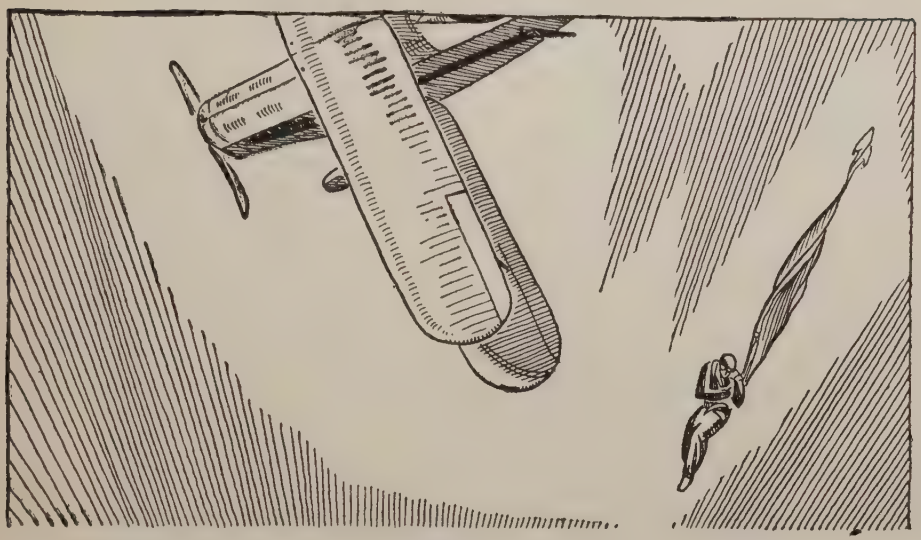
With a tail wind, Samson sent his plane over the first part of the trip, without encountering any trouble. There were brief

showers of rain but he could maintain reasonable altitude and the visibility was enough so he did not have to worry. An hour and a half after leaving Cleveland he saw a red flare burning on the air mail field at Goshen but after circling the field and receiving no other signal, straightened out and continued on his route. The clouds were dropping gradually and he flew south hoping to run into clearer weather. Below him the rails of the Wabash Railroad appeared and he followed their direction for ten minutes and then turned over the field at Lakeville. There were no flares. He returned to the railroad and went on. So far the flight had been uncertain but without extraordinary weather conditions. Presently the fog began to drift in under him. Gray patches blew down upon the plane, and he ran into them, lost the earth for a moment in the blank dim mist, came through and was able to push on with no serious difficulty. Nevertheless he was not too pleased with the prospect. The fog increased and the heavy pack of the clouds seemed to be crushing earthward with its own weight. It was impossible to fly a straight course and he turned north, sifting through the rolling billows of fog, heading for the flat country near McCool. Now the ceiling was down to 300 feet and in a few minutes the fog came in so thickly under him that he had only an occasional glimpse of the ground. So intently had his mind been occupied with the flight he had lost track of the time. There was no sense in staying in the fog close to the ground so he pulled up and put a few hundred feet additional between his wheels and the earth. Every once in a while he would come down, hoping to find conditions bettered, but the fog held, and the sight of the dark towers of the high tension lines convinced him of the wisdom of staying

aloft. He said: " Decided that I had better make for Lansing, but could not locate it then. I started back for McCool but I could not find the ground again."

Now he was thoroughly alive to the danger of his position. There was no chance of getting under the fog. Safety lay in trying to get above. He opened the motor, eased the stick back and began to shove the heavy ship up through the mist. There was no sensation of rising. The space in which he flew was a constant gray-white emptiness. Every direction was the same. It was like having yards and yards of fine cobwebs wound across his eyes. The sensation of seeing remained but beyond the ship in which he sat there was nothing but the appalling blankness. Only the gradual movement of the needle on his altimeter and the lowering of the air speed indicator told him what was happening. The bubble was centered in the bank indicator and he knew the plane must be level. The dial showed eight thousand, nine, nine thousand eight hundred. . . . He stopped there. The fog showed no sign of thinning. He let the plane come down to six thousand feet and set a course to the south, hoping to run out of the murk. For almost an hour he continued without the slightest change. He then turned back and flew northwest. Suddenly the ship surged out into a gap. Below the earth was hidden. He said: " Flew in all directions trying to keep in the cleared spot but it eventually closed in. Up to this time I had quite a bit of trouble flying blind, but always seemed to recover."

The clock on the dash showed ten minutes after eleven. He had been flying four hours, the last hour and a half almost entirely blind. His report of the flight from then on is as follows:



THE CHUTE FUNCTIONED INSTANTANEOUSLY

" About 11: 10 A. M., while cruising around 5,000 feet I encountered some very rough air and my flash-light, which had been hanging on the flare release handle, flew out of the cockpit, then the arm of the Bank and Turn Indicator got over to the right and the Ball was up in the left-hand corner and the ship was picking up speed at a terrific rate and losing altitude fast; in spite of all I could do, the instruments remained unchanged. Realized that I was unable to meet the existing condition, either due to inexperience in flying blind in rough air or being mentally fatigued, so I decided to jump. Shut off the gas valves, drained the carburetor petcock in the cockpit, pushed the briefcase under the seat, rolled back the stabilizer, cut the switches and stepped out. Did not experience any difficulty in getting out of the ship but stepped be-

tween the exhaust pipe and the fuselage and went out backwards, my leg bending the exhaust pipe at right angles.

"Found the rip cord easily and the chute functioned instantaneously. I heard the ship hit about 20 seconds before I landed, and when I did land it was in a pool of water and mud. The ceiling at that time was less than a hundred feet. I landed in a field next to the National Brick Company and asked a workman if he heard the plane hit, and he informed me it was about two miles southeast of where I landed. Found the plane as directed. The motor was imbedded in the bank of the creek and the plane was on its belly, right wing missing, mail pits busted open and mail scattered over the field.

"The mail was all recovered and accounted for. Mr. Mounts notified Mr. Lott that the ship was damaged and pilot O. K., so I had the mail trucked to the nearest hard road and turned it over to the post office. I reached the air port at Chicago at 4: 10 P. M. Believe that I landed at 11: 20 A. M. as my watch stopped when I hit the water. The ship landed near Dwyer, Indiana."

XIV

Rain began to fall shortly after Pilot John Kytle took his Pitcairn Mailwing off from the field at Atlanta and headed north with the night mail. He had left in a moderate quartering wind which increased steadily until it was blowing a gale. Seventy-five miles an hour the storm lashed out of the southwest and the rain, driven by the wind, flowed out of the darkness with the solidity of a river, making Pilot Kytle's cockpit a place of misery, and blotting

from view the beacons on the earth below. His biplane with its comparatively small cargo of mail, and powerful motor was capable of a cruising speed well over a hundred miles an hour. He tried to hold a course and beat through the storm toward the field at Spartanburg, South Carolina.

Pilot Kytle is one of the crack pilots on the Southern mail route. Deliberate, careful, accurate, and one of the smoothest stunt fliers in the country, he had flown the division so many times that he knew every house and railroad, and field. But on this autumn night his knowledge was of no assistance. There was nothing below to give him the slightest indication of where he was. He kept on at a good altitude, hoping for a break in the weather. It was tricky flying. The wind tossed the little plane about until at moments its wings were vertical to the earth and all the pilot's skill was necessary to recover without a crash. He had long given up any hope of finding the field, and presently he realized that he was so far off his course that there was no chance of getting back. Crouched over in the cockpit, he watched the pale circles of the instruments, the steady fall of the gas indicator, struggled to keep the plane in control and waited for whatever was going to happen. He hadn't long to wait. The wind had blown him many miles from his path. Unknown, and unseen, the mountains were already beneath him, building up from the low foothills, rising in successive ridges, higher and higher, immutable barriers where he must eventually crash. Methodically his mind and muscles performed the ceaseless operations necessary to keep the plane aloft. Steadily the mountains rose to intercept the rocking plane. In the flicker of dimmed lights on the windshield, he could see the stream of rain

swirling across the curved back of the fuselage. It was difficult to hear the motor above the shrieking wind, but the propeller glinted with the rain like a thin quiver of lightning fastened at the nose of the plane. His powerful landing lights made only a circular blur of light at each wing tip, reaching scarcely a dozen feet into the murk. He peered out from the slight shelter of the lee side of the cockpit . . . If the wind was blowing about fifty miles per hour, his drift ought to be . . . The gusts felt more like a hundred. It was giving him a boost forward too. The air speed had been consistently around a hundred twenty. Add thirty to that . . . He gave it up. He was lost! There was nothing to do but keep on until the gas was about gone and then step out. Nothing *really* to worry about. . . .

But he did not know about the mountains.

The barrier had been reached. Ahead of him, unsuspected in the dark whirlpool of the storm, the mountains towered about the plane. At more than two miles a minute he was headed for the black wall of rock, trees and earth.

Without warning the plane crashed. Both wings were ripped away. In a rending plunge, the ship splintered the trees, and plowed into the mountain. Slammed forward against the instrument board, Pilot Kytle was knocked unconscious.

When he came to, he had no idea how long it had been. The rain still poured down out of the darkness. Satisfied that he had no serious injuries he fumbled about in the tilted cockpit until his hand encountered the flashlight. With this he examined the wrecked plane. The nose was buried four feet in the ground, only shreds remained of the wings and the fuselage was bent and torn.

Behind him, the trees were mowed down in a wide path where the ship had cut through. He climbed out of the cockpit, and with one foot on the stirrup-hole was about to step to the ground when some instinct caused him to hesitate. Flashing his light, he saw below a vertical drop of twenty feet down the mountainside. Blessing his caution, he crawled along the fuselage toward the nose. He examined the mail compartment and found the lock intact. No stray mountaineer could open it. He started along the sodden ground, and felt himself slide into space. He rolled and slid forty feet and stopped finally, in a comparatively level glade. Rising, he continued on, descending the mountain, and along toward four o'clock reached a deserted cabin. Thankful to be out of the rain, he entered and decided to try to sleep until morning. He was exhausted, bruised and battered. The rain scuffed softly on the rotten roof of the cabin, but there was another sound; a harsh dry rattling that sent his blood cold through his veins.

Turning on his flashlight, he moved the brilliant spot slowly along the base of the single room. In the corner opposite, lay a rattlesnake. "Well," he thought, "this is getting to be too much like a fiction melodrama." Since the snake showed no signs of attacking him, he decided the shack was more comfortable than wandering in the rain, and after a while went to sleep.

When he awoke, it was daylight. The snake had vanished. He went out and continued down the mountain until he reached a stream. The heavy rain had turned it into a miniature flood. There was no way to cross and he followed it, hoping to find a house or town. Presently he saw two men on the opposite bank and shouted to them but the roar of the rushing water prevented

them from hearing him. So he wrote a note, asking directions, tied it about a stone and threw it across to them. The men sent back, in the same manner, information that the nearest town was eleven miles away. One of the men took a piece of corn pone, wrapped it in paper, tied it to a stone and threw it across.

"I made an expert catch," said Pilot Kytle. "It tasted like a chicken dinner. Said good-bye, and started on, reaching Old Fort where I found I'd hit on Rocky Mountain in South Carolina, just about fifty miles off my course. By that time I was so tired I could hardly stand. I found the postmaster, but he wouldn't believe my story until I showed him my papers and licenses. He sent some men after the mail while I telephoned Richmond. The men who saw the ship said an impression of my body was made on the instrument board where I hit and the fire extinguisher, that got in the way, was smashed flat."

Colliding with mountains is no novelty to Pilot Kytle. He had crashed up on Stony Mountain previously, escaping, that time, with just as fortunate lack of injuries. On his way to get help, he met a number of men who had heard the crash and were out seeking the wrecked plane.

"When they saw the ship they asked me where the body was. I said, 'Here's the body. Come help me get the mail out.' And it took quite an argument to convince them I was really the body."

XV

It would be almost impossible to find among the men who flew the mail or are flying it today, one who has not, at some moment,

found himself involved in a desperate situation. The best of motors fail, planes, even today, catch fire, fog blinds the pilot, hurricanes, treacherous currents, snow and ice spring their malignant traps. These things are all part of the job of "pushing the mails."

There is one pilot who has never had a major accident, and since he is, also, the oldest pilot in point of service with the air mail, his career becomes even more remarkable.

E. Hamilton Lee, after a few years of flying the curious contraptions of wire and wood known in pre-war days as airplanes, became an instructor during the war. He taught combat flying which included everything known about handling a plane.

In 1918 he joined the air mail and became one of the regular pilots on the New York–Washington route.

As the air mail developed Hamilton Lee added to the enormous number of miles flown without accident. He flew one of the two planes on the first leg from New York to Cleveland when the Transcontinental Air Mail began operation in July, 1925.

On the 23d of July, 1929, he flew his millionth mile in the air. His career is the story of the air mail itself. From the cockpits of the old lumbering Jennies he watched the white, inverted bowl of the Capitol slide away under the wing; leaning out of the DH4's he saw the deep green waves, the Alleghenies, mysterious under the moonlight, the narrow field at Bellefonte, the blaze of the Cleveland beacon; the gray-blue haze of Chicago over the bright edge of the lake. He has flown forty-five different makes of planes. In Boeings he swept over the flat farm lands westward to Omaha. Storms, fog, rain, hail, have come and gone during these dozen

years and at the field the grease-monkey replies to the usual question, " Yes, Lee's coming in to-night. Sure. E. Hamilton Lee, Senior Pilot. Due twelve-thirty. Almost that? Here he comes." The waist-deep flood of pale light flows over the field. A long plane sweeps down out of the upper darkness, touches the earth lightly, rolls to a stop. Senior Pilot Lee drops over the round flank of the ship, and goes across to the Field Manager's office.

Forced landings? He has had them. Motor failures, mechanical difficulties; he has been sent down by storm and fog in the same way every other pilot has, but never with serious result.

Twelve years in the air with the mails might seem like a long time, but not to Pilot Lee. He looks back upon those early days with the affection men give to a past where dangers and difficulties overcome, lend an aura of romance. The beginnings of all the great experiments of man seem to have a glamour which success, in some fashion, dulls. So Hamilton Lee remembers those distant times and regrets the passing of those days. " Some of the most dramatic incidents happened along the old transcontinental route," he said, " when flying over an ocean of black fog with no communication, nothing but flares and a parachute. That was no afternoon tea."

Perhaps he was remembering a bleak March night four years ago when he was taking the mail from Chicago on to Omaha. West of the Mississippi a late winter storm had swept down from the waste of northlands and had covered the entire countryside where his path lay. It was a bitter night, with a cold, rain-laden wind, streaks of sleet and snow. The desolate earth below shuddered to the wild blast of the storm and up in the midst of it Lee was tossed

about so badly that only his safety belt prevented him from being thrown clean out of the cockpit. He shoved the plunging DeHavilland ahead, hoping to beat through the storm, and condemning everyone responsible for flying the mail at night. Instead of coming through into better weather, he soon found conditions becoming worse. His landing lights illuminated a whirling space of snow and sleet and he decided to land. He kicked out a flare and saw a pasture beneath. In spite of the storm he landed without any serious difficulty.

In the desolate field he sat while the cold rain drove into the cockpit and soaked through his heavy flying suit. He decided to go on, and got off into the storm flying barely a hundred feet above the ground. When he sighted an emergency field he came down again, and after a brief stop went up and continued his perilous flight.

At the Omaha field the manager and night crew were worried. No reports had come in, and the wires were all down between the emergency fields. They had given up hope of his arrival when they heard the harsh roar of his motor up in the darkness. Barely were the lights on, when his plane squashed onto the sodden field and rolled up to the hangar. Lee, wet and cold and tired, climbed out of the plane and stalked into the office. He sank into a chair and glared at the board where the pilots' names and the numbers of the ships hung on small plaques under the name of the field where they were reported to be. Suddenly Lee caught sight of his plaque hanging in the Chicago rack. "By gosh, I'm in Omaha," he said, and, rising, moved the plaque over two stations. Then he noticed plaque "335" on the Chicago list. It was the number

of the plane he had just brought in. He stared at it indignantly. "What's more, I didn't walk, either," he added, and stalking to the board hung the number under his name on the Omaha hook.

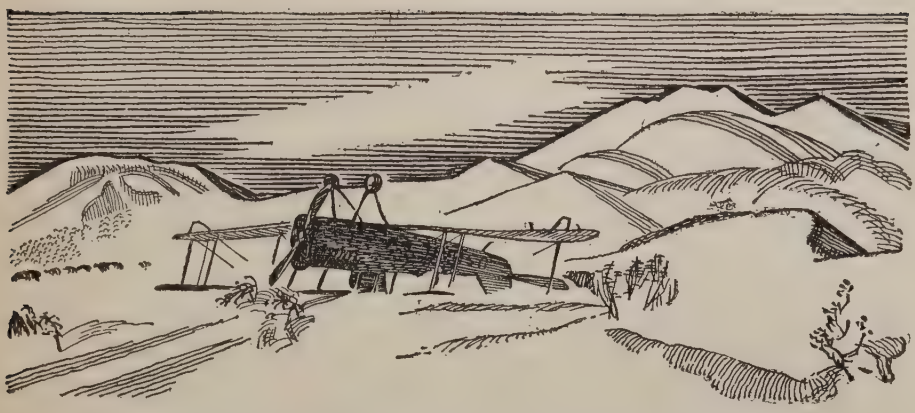
XVI

When the night-day Transcontinental Air Mail left the east and west coasts on July 1, 1924, the DeHavilland rising from the Golden Gate to begin its long climb over the mountains to the field at Reno was piloted by Claire K. Vance. As he passed over the Hump, he may have recalled the previous Thanksgiving Day, and the disaster that followed.

Then he was carrying the mail on the regular day trip to Reno where it was entrained and so, by train at night and plane by day, brought through on east to New York.

He had taken off with the dubious weather report—"Summit snowing, ceiling and visibility totally obscured. Reno broken clouds, solid thick cloud bank down on mountains west, visibility west six miles, east unlimited"—to ponder while his plane surged up the long climb through the Sacramento valley.

At fifteen thousand feet, he was above the storm but ahead, on the Hump, the cloud barrier reached up far beyond the range of his DH. He flew up and down parallel with the mountain range looking for a break in the dense wall. A half hour passed with no change and he decided to return. The sight behind him was anything but reassuring. While he had been seeking a path east, another storm had moved in behind and below him, and there he was trapped between the hidden mountain peaks and the earth be-



MAIL PLANE WRECKED IN THE MOUNTAINS

low. He began to circle, waiting for an opening. Presently it came, a small rift in the cloud. Down he went in a tight spiral and came through the layers of cloud into a blinding snow-storm. The situation had scarcely improved but he knew where he was, and decided to land on a small plateau he had long ago spotted as a possible place in an emergency. He remembered the old mining settlement Last Chance, near by, where two or three men still lived. He flew over the shacks to attract attention and then along the plateau where he cut the motor and hoped for a bit of luck. He pulled back on the stick to stall in as slowly as possible and waited. The plane struck, the tail slashed up and over it went on its back. Vance undid his safety belt and tumbled out of the cockpit without any serious injury.

Instead of the plateau being covered with sage brush, as he had thought, there was a six-foot growth of manzanita brush with large, thick, twisted branches almost impossible to penetrate. Vance

labored through this dense growth, getting scratched and wet and weary in the process. Darkness was coming. He was no longer sure of where the trail to Last Chance crossed the plateau, and, reaching a clearing, he decided to spend the night. In his pocket were four matches. Three went out in his attempts to light a fire, but the fourth try was successful. After an exhausting night in the below zero weather, he found the trail and reached Last Chance. The miners returned with mules and brought out the mail. It took a whole day for the little procession to reach the nearest town where the mail was carried on by auto and train to Reno while Vance returned to San Francisco. On the Oakland ferry he bought a paper and saw the headlines announcing that Pilot Vance was safe.

A man beside him said, " I see they found that lost mail pilot. I'm sure glad."

And Vance replied, " Me, too."

XVII

" Oh, sure," said the grease-monkey, " that's Jack Webster." A rather tall, lean pilot came out of the Field Manager's office and stopped to chat with the radio man. He had a pleasant manner, an engaging smile and a face slightly marked from the crashes he has been in, during his career as a mail pilot.

" He's one of the old timers," said the mechanic. " Began in 1918 when they were hopping Jennies from New York to Washington. He's seen the whole racket from the start and flown about every kind of ship that ever carried mail bags and a few besides,

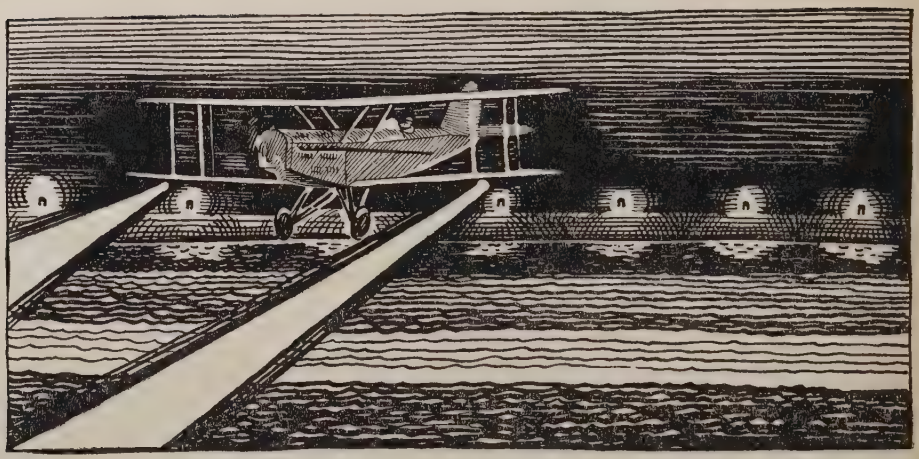
Jennies and DH's and Martin bombers and all down the list. Good? I'll say. He's been in enough bad jams to last any ten average pilots a lifetime. Why, listen . . . Wait till I get this finished and we'll go outside and smoke a bit."

He threaded the wire fastening through the metal shields of the engine cowling. With a greasy cigarette smelling strangely of oil and tobacco he continued:

"Last fall, November I think it was. Yea, in November, he was taking the mail to Cleveland in one of those Douglass ships. They're good buses, but get the right conditions and they'll go into a flat spin and no one but the Angel Gabriel can get them out. I'm not even sure he could. He'd gotten past Bellefonte when he hit as dirty a sleet storm as anybody could find. He was flying blind and the ship iced up before he could do a thing. She went into a flat spin at about four thousand feet and began to fall. You come down fairly slow in a flat spin, but down you come and nothing can stop you until the ground comes up. They go clean out of control. He hit and was pretty well battered up. But a month later he was back again and going strong.

"You don't fly this line very long without a lot of things happening to you," he continued. "Plenty have happened to Jack Webster but he always comes up smiling.

"Let's see, about a year before, he took off from Bellefonte coming here to Hadley and ran into the usual fog and rain. His compass went haywire and when he got a glimpse through the muck he saw nothing but the green cold top of the Atlantic Ocean. He put about and flew west until his gas gave out. Then he stepped over and pulled the ring. When he got down he found he was in



THE FIELD WAS COMPOSED OF WATER

Connecticut. Maybe he likes New England. He left here one night and the same thing happened. Only this time he could see and sat down without any damage near Branford in Connecticut.

" I don't know if I can remember them all. He was practicing night flying out in Chicago. This is a long way back. Then the mail was flown only in the daytime. He took off and the motor ' conked ' at a hundred feet. He smashed down and was knocked cold. The ship caught fire but the boys cut his safety belt and dragged him out in time.

" Want to hear any more? Well, he almost made a perfect landing in the dam of the Northern Pennsylvania Power Company. Fog again. He couldn't find any place to set down and the gas was getting low. Then he saw a lot of lights around a dark space. It looked just like a field. He came in for a nice landing and at the last minute saw his beautiful flat field was composed entirely of water. He did some fancy flying, but couldn't recover, so he

nosed into an orchard on the edge of the dam and cut down a lot of trees. The plane was kind of chewed but Jack got off with a few cuts and bruises.

" Yea, he's going out tonight."

XVIII

There was an Air Mail Pilot known as " Slim " Lindbergh. He " pushed the mails " from St. Louis to Chicago. At the controls of a DH4 standard mail plane he flew through rain and fog and darkness adding to the experience which was to make him the most famous aviator in the world.

The regular Transcontinental Air Mail route had been in operation for some time when the St. Louis–Chicago feeder line began, and Lindbergh flew the first plane from Maywood Field south with mail relayed from New York, over an unlit route with few facilities. As in the other beginnings of the air mail, the pilot was dependent almost entirely upon his own skill and judgment. He took off whenever there was a possibility of getting a ship into the air, flew as far as possible, and, if he couldn't get through, landed, hoping for the best, and sent the mail on by train. In spite of these handicaps the St. Louis–Chicago route maintained a high percentage of operation, but the pilots were frequently in difficulties due to lack of weather reports and poor facilities for emergencies. During his service with the air mail, Lindbergh was twice caught in situations where only his coolness brought him through successfully.

Both emergencies resulted in parachute jumps, and both were

caused by fog. The first time the weather closed in upon him, the fog lay upon the ground and reached up about six hundred feet. He kept well above and flew by compass toward Chicago hoping to find an opening. Only a dull glow disclosed the immense lighted city below. It was a baffling sensation to be flying around, aware of his proximity to the field and yet unable to see the slightest object below him. Lindbergh, after circling for a half hour and failing to find a rift flew west, thinking he might sight one of the beacons on the transcontinental route. This was unsuccessful and he turned south. Then his engine stopped. He switched on the emergency tank, and knew he had only twenty minutes' gas supply remaining. He came down and released a flare. It disclosed a solid floor of fog, sank into it and vanished. Lindbergh then climbed the DH to a mile altitude. The engine sputtered and died and he " bailed out." In his official report he wrote:

" I was falling head downward when the risers jerked me into an upright position and the 'chute opened. . . . I pulled the flashlight from my belt and was playing it down toward the top of the fog when I heard the plane's engine pick up." . . . He had not cut the switches and the ship, nosing down, drained some gasoline from the carburetor and the engine caught and began to run. It circled about Lindbergh as he drifted earthward. Five times it swept about, dangerously close and then plunged into the fog. Lindbergh landed in a corn-field and, securing assistance, located the crashed plane and rescued the mail.

His second jump was almost an exact repetition of the first, although this time he shut off the motor and he left the ship over two miles in the air, falling through a heavy snow-storm, utterly unable

COLONEL CHARLES A. LINDBERGH OPENING THE MAIL ROUTE TO CENTRAL AMERICA

to see any object until he struck the ground. Again the mail was secured and forwarded to its destination.

XIX

" Flying the mail is our job," said a pilot who covers the route from Hadley Field to Cleveland. " Most of us are in it because we believe in aviation; because we believe in the future of flying and in the mail service there is the greatest opportunity to advance the cause of commercial aviation. Here everything possible is done to aid in the development of planes, the study of the weather, the perfection of instruments, which will result in making aviation in this country as practicable a means of transportation as railroads or automobiles.

" We would like people to understand this and to interest them in flying. Now they regard it as a spectacle, something confined to a few and limited in its uses. This isn't true. It is potentially a great industry and the men who are able to, and have the vision, should be taking part. The sooner the public realizes flying is not a ' stunt ' but a business, the sooner commercial aviation will become a practicable and paying proposition. The old ' barnstormer days ' are over. The pilot who flew a heap of junk and wire at the country fair is almost forgotten. It is a business for young men, but it needs older men with experience and understanding to guide it properly."

He arose and said:

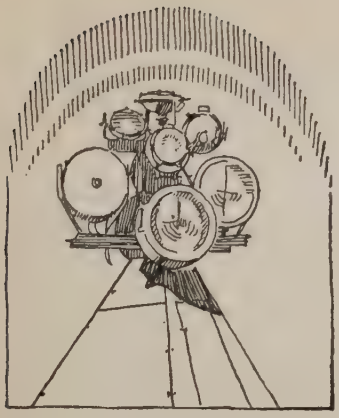
" I've got to get ready."

A few minutes later he came out wearing a flying suit and hel-

met. On the concrete apron a long blue mail plane waited. The motor ticked over slowly and a little spray of dust arose from the dry ground beyond the concrete. The mail was stowed and the covers locked. He walked over to the plane, the flat cushion of his packed parachute bumping awkwardly against his legs. He climbed into the cockpit and adjusted his goggles. Slowly he opened the throttle until the harsh whistling of the propeller and the roar of the exhaust seemed to fill the air. The flood-lights went on, and in the milky stream of light the plane shone, lost its solidity and moved forward like a great luminous bird. A wave of dust swept back. The noise of the motor became a shrill screaming. The lights went out and the bright star on the tail could be seen rising into the dark night. Then it vanished and presently the red and green running lights were visible as he swung back over the field, banked and headed west toward the dim blur of the Wachung Mountains. The night mail was off!

PART THREE

THE AIR MAIL TODAY



I

THE FIELD

"SAMSON'S due in at four-thirty," the field manager said. The slightly rolling, green surface of Hadley Field shimmered in the sunlight. Westward, the low ridge of the Wachung Mountains rose blue and misty upon a blue sky, dappled with fluffs of cloud blowing on the mild southerly wind. On the concrete apron before the hangar a clattering tractor tugged at the tail of a long, blue-fuselaged mail plane, turning it slowly until the nose pointed toward the wide doorway, and three mechanics guided it in beside the other ship which was to go out that evening.

The afternoon was still, with the hot langour of a summer day dropped unexpectedly into the midst of spring coolness. No one felt energetic. From the interior of the hangar came the burr of an electric drill. At a distance it sounded strangely similar to the buzzing of the bee spinning giddily above an early clover that grew at the edge of the concrete. Along the western side of the field, beyond a road, was a sprawling farmhouse, tree-shadowed and

weather-worn, with the circular silo standing like some medieval tower guarding the clustered barns.

The ground east of the hangar dropped a half dozen feet to the concrete of the main road, and the spindly steel masts for the radio, beyond the road, spun a glittering pattern of cables and wires in the sun.

At the corner of the field was another hangar, where planes could be rented for trips of all sorts, and students learned the mysteries of flying. One of them was over the field now, coming in for a practice landing. He leveled off a bit too high and pancaked; the plane bouncing like some uncertain bird. You could hear the shrill complaint of the landing carriage, and see the instructor's arm waving irritably above the front cockpit. The plane seemed ridiculously fragile beside the bulk of the mail planes, looming still larger in the shadow of the hangar. Its little five-cylinder radial motor sputtered and fussed. The instructor leaned out and talked earnestly with his pupil, illustrating his speech with unmistakable gestures. Such emphasis, in the heat, seemed out of place. The student nodded attentively, and presently the little plane wheeled about and taxied across the field, turned into the wind, hesitated, and, tail in the air, scurried like a frightened sandpiper, rose wobbling badly, flattened out, and began to climb steadily up the blue invisible paths to the upper air.

Well, in that way, they all begin, and even mail pilots, in their " dodo days " make bad landings, emulating the famous Chinese three-point landing, " one wing, one wheel and the prop."

The drill continued its buzzing, and the bee, drunk with its plunder, took off from the lonely clover and flew heavily away.

The field manager came out and stood, watch in hand, gazing off to the west.

"Samson ought to be in soon," he said.

Another buzzing filled the heavy air. A blue plane with silver wings dropped out of the sky, circled the field and drifted lazily to earth.

"There's Sammy," called a mechanic. "He must of come straight through. We didn't get any word of him since he left Cleveland."

The mail plane taxied across the field, the wind from its propeller tearing a great streamer of yellow dust loose from the dry earth. On it came, rolling over the concrete and stopped with its shining nose only a few feet from the gas tanks. Instantly the mechanics had run a hose to the tanks and the gasoline was pouring into the receptacles built into the wings. Over a hundred gallons flowed through before the gauge showed full. Pilot Samson tossed his helmet, goggles and parachute to a helper and climbed out of the cockpit. As soon as his report was made out he had no more flying for a day and a half unless some emergency arose.

His flight report contained the following information: Date, Pilot's name, Plane number, Time of departure and arrival, Oil pressure at start and finish of trip, Oil temperature, Gasoline pressure, Water temperatures, Ammeter reading at start and finish, which battery, Average Revolutions per Minute of the Motor, Condition of motor, Condition of instruments and Radio. In addition he has to report any intermediate landings with time of arrival and departure; any beacon lights that are out or not turning, any

boundary lights not burning; the condition of emergency fields and a general weather report.

Meanwhile, the mail compartments of the plane have been opened and the bags are being passed out to the post-office employees who sort and load them on the light mail truck that has backed up to the plane before the propeller has stopped turning. One man reads the tags on the bags. "City Number One from Chicago," he calls. "City Number Three from 'Frisco. Salt Lake. Fort Worth" . . . His voice goes on monotonously and a large man, wearing a .45 caliber revolver strapped about his waist, checks the bags on a long slip of paper. Between the wings the mechanics, heads and shoulders buried in the deep compartments, begin to pass out the express packages. One of them holds up a tin can. It is punched full of small holes.

"What's in this thing, do you suppose?" he says. "He puts it close to his eye, peers into one of the openings, and gives a yelp of surprise.

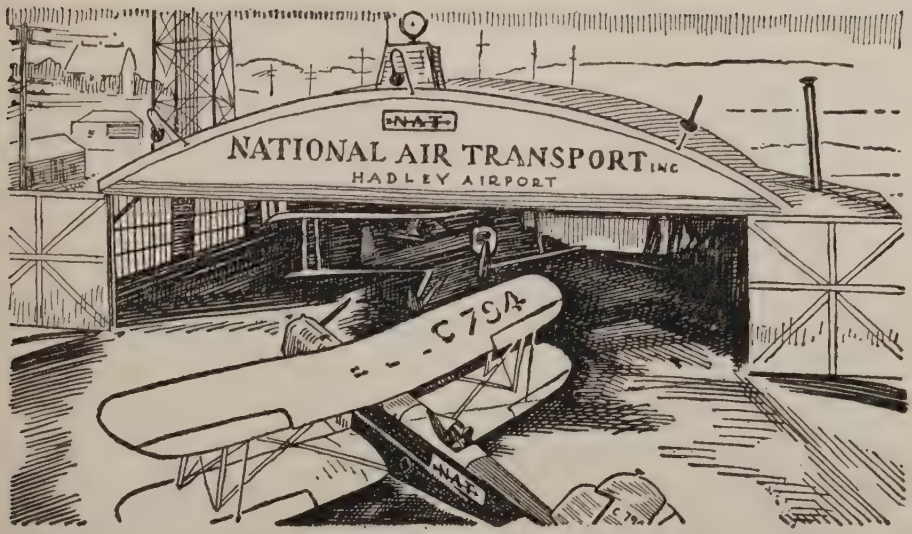
"Hey, it's a live snake. Take it somebody. Here, grab this. Hey . . ."

There is a roar of laughter. One of the postal clerks reaches up and takes the can. He, too, peeks into the openings.

"By gosh, it *is* a snake."

The can is placed at a respectful distance. Its label is addressed to someone in Massachusetts; it was mailed in the far west. The unloading continues, and the mechanic is still talking about the strange parcel.

"Can you imagine that? Sending a snake. That guy must have a funny idea of a joke. I've seen all sorts of things come in here.



EASTERN TERMINAL OF THE AIR MAIL

Hey, Eddie, remember when we got that crate of live turkeys? I thought that was the limit. But a snake. And I picked it right up and stuck my face into it. Boy! If I'd known you wouldn't have got me within a mile of it."

Pilot Samson came out of the field office and went across to the eating shack, bearing the name of Pilots' Inn above the door. He is a tall man with the broad shoulders of a heavy-weight boxer and a long, rangy stride. Presently he returned placidly eating an ice-cream cone and climbed into his automobile.

" Hey, Sammy," called the mechanic, " ain't that a new bus? "

" Yes, want to buy it? "

" I couldn't buy one wheel of that baby."

The mail unloaded, the truck departed, and the plane was turned around and the tail fastened by a chain to a ring at the edge of

concrete. One of the mechanics got into the cockpit and another clambered up back of the motor and inserted the crank that winds the inertia starter. He turned it as though winding a giant clock. Around and around, until the man in the plane shouted: "Hold it!" There was a shrill crescendo of sound like a buzz-saw gone mad. Suddenly the metal propeller spun over, the motor caught, spit and backfired, then settled down to a steady purring. For a few minutes the mechanic let it idle until it began to warm. Slowly he opened the throttle. The nine cylinders burst into a frenzied uproar. The propeller became a wavering glint of silver. The exhaust beat the air and the propeller blades, revolving fifteen hundred times a minute created a screaming, ripping noise that tore at your eardrums. Every other sound was driven from the world; the space within fifty yards of the plane throbbed with the combined racket of prop and motor. There seemed to be no way to escape this raucous shrilling sound, edged like a knife, penetrating everything, becoming part of you, until it seemed to be inside your head. . . . Abruptly the motor was throttled and the quiet returned, gratefully relaxing. Again and again the mechanic tested the motor, listening intently to its thunderous clamor, until he was satisfied that every part was operating exactly.

After that the radio operator—a young chap who appeared to be scarcely out of his teens—disappeared into the cockpit, and with the motor wide open, tested the reception of the plane's radio.

That checked, he got out and came over to one of the pilots, who, although not on duty, was at the field.

"Got some good music," the radio operator said, grinning. He lit a cigarette and sat on a mail truck. The pilot was interested

in radio. They discussed reception and possible improvements. The radio-man said, "Remember when three of the boys were coming back from Cleveland? They had no mail and were flying in formation. I forget who was leading, but anyway he had his switch on, and just as they were going nicely along in a Vee he got orders to return. Well, he just pulled up in a half loop, rolled over and headed back. The others didn't know what to make of it. One minute he was there, and the next he'd gone. They came on in, still puzzled."

The chief mechanic was back in the plane and taxi-ing it slowly around to the back of the hangar where the regular check-up of ship and motor was begun.

The cowling over the engine mount was removed and the entire motor cleaned with gasoline, sprayed under pressure. As though by magic, grease, oil and dirt disappeared.

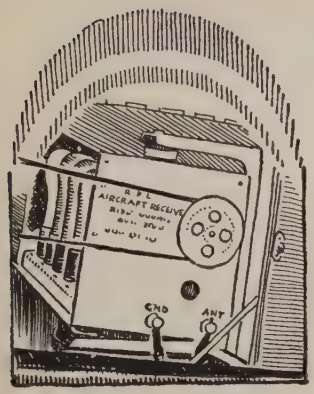
"No major repairs are made here," he said, "unless it's impossible to fly the ship to Chicago. We check over valves and plugs and all parts. Occasionally we do some more serious repair. Once we did have to install a new motor. It was shipped east to us."

Oil was inspected and the tank filled. The plane, two hours after its arrival, was ready for flight, although it would receive another inspection the afternoon before being used again.

The shadows were lengthening across the field. Evening coolness tempered the heat. Two of the mechanics wandered over to snatch a bite of supper. There is a head mechanic and two assistants on duty all the time. They work eight hour shifts and change about so the same men do not always get the arduous

night hours. In addition to servicing the planes, they load and unload the mail, not an easy task when there may be over a ton of incoming and outgoing mail each day. They are young fellows, eager, absorbed in aviation, careful, intelligent and mechanical experts in spite of their youth.

Theirs is an exacting and responsible job. The safety and often the lives of the pilots depend upon their skill.



II

THE FIELD OFFICE AND PILOTS' ROOM

AT one end of the hangar the field manager has his office. It is a small room with two or three desks. Doors lead into the Weather Bureau room and the hangar. Through the glass the silver nose of a Douglas mail plane rises stubby and bright at an unexpected angle. One end of the room is covered with a huge map of the Eastern Division of the National Air Transport route. A line of pins with different colored heads marks the beacons, emergency landing fields and the main fields at Hadley, New Jersey; Bellefonte, Pennsylvania; Cleveland, Ohio and Chicago, Illinois. Below it, is the line of teletype machines, black metal boxes with glass tops where a strip of yellow paper about three-quarters of an inch wide runs through a maze of keys and cogs to emerge bearing information concerning weather, fields, movements of planes, requests for information and notices concerning the flights of the mail planes. These machines, similar to those in use by the Western Union Telegraph Company operate in a continuous relay all along the route of the mail. Any station may

send out a message and this is printed automatically on the tape at every other station. There is a constant ticking and the tape unravels bearing a multiplicity of messages. All those concerning the air mail are headed with the letters PX. The reports of the planes in flight come in with the name of the pilot, the license number of the plane, the time of arrival and departure, so the entire system is aware of everything happening. The use of the teletype displaces the more complicated telegraph and telephone communication formerly in use. It is efficient, speedy and reliable and of great importance in the operation of the mails.

Beside the teletype is the desk of the field clerk, who has charge of all the routine of reports. A blackboard hangs beside the hangar door and has a row of small plaques, each bearing the name of a pilot. Those taking the mail out are hung at the top.

At the end of the passageway through the Weather Bureau, is the pilots' room. It is simply furnished with iron cots and tall pressed steel lockers. The cots are for the incoming pilots who, arriving in the night, often stay there rather than drive to a hotel. The lockers are for the pilots whose base is Hadley and in them they keep their flying equipment. Along the wall hang a row of parachutes each under the name-placard of its wearer, and beside the door is a small box labeled, " Cotton for the ears." It is an austere little room but could it repeat the stories told within its four walls they would be as exciting and adventurous as any fiction could conceive.

III

THE WEATHER BUREAU

"THE mechanical difficulties in connection with the regular scheduled operations of airplanes in air transport service may now be said to be practically eliminated. This leaves *weather* as almost exclusively the cause for our failure to operate on schedule whenever we do fail."

With this paragraph Wesley L. Smith, Superintendent of the Eastern Division of the National Air Transport Inc., begins a report on the study of weather problems peculiar to the New York–Chicago Section of the Transcontinental Air Mail, but it is applicable to every place where the mail is flown today and shows the importance of the work done by the men of the weather bureau.

Superintendent Smith should know the value of weather reports for he was one of the crack mail pilots for many years and ranked next to E. Hamilton Lee in length of service and miles flown. He has climbed out of and into the cockpits of mail planes more times than he can remember, and on many a bitter night of mid-winter arrived at Cleveland with a layer of ice coating the wings of his

plane and another layer frozen upon his black mustache. He has encountered the worst storms, the thickest fog, the most treacherous weather, that the Alleghenies can produce.

To overcome these obstacles of nature an elaborate system of weather-forecasting is provided by the United States Weather Bureau and the Airways Division of the Department of Commerce.

In the long, low-ceilinged room at the Hadley Field terminal of the air mail, the men of the Weather Bureau collect and codify reports from all along the route of the mail planes as well as the general forecasts of weather conditions from which the probable storms the pilot may encounter are indicated.

These are noted on charts which the pilot inspects before starting his flight. On a shelf the teletype machines click monotonously and the tape unfurls bearing its code message of rain and wind and fog from the Gulf to beyond Chicago. While the weather between New Brunswick and Chicago is of most immediate interest, it is necessary to collect data on conditions hundreds of miles away which will influence the eastern country in from twelve to twenty-four hours. The New York–Chicago Mail route is affected as a general rule, by all storms experienced in the United States as they move toward the St. Lawrence Valley, from where they sweep into the vast Atlantic spaces. According to Superintendent Smith they fall roughly in four classes.

A. The most frequent; sweeping along the Canadian border from west to east.

B. Storms moving southeast from the wilderness of Northwestern Canada and then returning northeast along the Mississippi Valley.

C. Storms originating along the Mexican border and moving northeast.

D. Storms brewed in the cyclone centers of the West Indies and moving up the Atlantic Coast.

All of these hold dangers for the air mail pilot and the Weather Bureau, to protect him as much as possible, must have information as soon as possible from the various regions where these storms begin, and diagnose their probable paths.

In addition there are local conditions to be expected at different seasons of the year, such as ground fogs in summer along the seashore and over the river valleys in the mountains. There are thunder-storms during the hot months, but these do not present serious difficulties, although Pilot J. D. Hill may think differently.

Caught in a violent electrical storm while bringing the mail east, he found it impossible to go under or climb above. So he ploughed on through with the whole sky a network of fire, terrific wind and a condition which would have brought heart-trouble to most men. The situation was a desperate one and showed no signs of improving. The lightning flashes momentarily blinded the pilot, and in the instant of time necessary for his eyes to readjust themselves to the darkness, the ship careened crazily through the storm. But as long as the motor was functioning perfectly, he kept ahead, holding plenty of altitude and hoping every minute to reach the edge of the storm. Below were the peaks of the treacherous Alleghenies reaching greedily up into the clouds and he knew if anything went wrong his chances of a safe landing were about one in five hundred. The thunder was deafening and the lightning split the thick darkness in myriad streaks of flame. Just as he

LOADING THE MAIL

had decided the storm area must be nearly past, there was a terrific crash; the world vanished in blue flame and he fell forward unconscious. A bolt of lightning had struck the motor!

He came to and opened his eyes, only to find a wavering blue haze obscuring everything, and, unfastening his safety belt, prepared to "bail out" into the raging storm. At that moment his vision cleared. The motor was still running smoothly. A glance at the altimeter showed the plane had fallen over a thousand feet, but it still had sufficient room between it and the mountains. He brought the ship under control, and a few minutes later flew out of the storm, and with no further mishap reached Hadley Field.

There a close examination of the engine showed no mark of the bolt, but Pilot Hill has little liking for thunderstorms.

Most pilots fly high when it becomes necessary to enter a thunder-

storm. The violent winds which he is sure to encounter, the "holes," downdrafts and general turbulence, may hurl him to the ground, or into a mountain, unless he has plenty of altitude in which to regain control of his plane. And he must, of course, switch off his radio set, otherwise he will be deafened by the static caused by the lightning. These summer storms bring a low ceiling of clouds, usually only three or four hundred feet from the level ground, and completely obscuring the mountains. The mail pilot must maintain at least a three thousand foot altitude on the route to Cleveland. He must also be told over the ship's radio what changes are taking place in the weather at the port where he is to land; any changes in the barometer so that he may correct his altimeter, and the direction and velocity of the wind at his destination.

The winter months bring the greatest problem of the air mail: ice. Snow does not seriously hamper the pilots; it limits visibility but often the ground can be seen when ahead is nothing but an opaque whirl. In autumn the real troubles of the air mail pilot begin. Gone are the warm, clear nights, when he can ease back comfortably, wearing only a light sweater, and watch the mysterious earth swing below him, a strange heaping of shadowed hills, with the long waves of moonlight washing the fields, shining on the whitewashed side of a Pennsylvania farmhouse, or changing a river to some wandering thread of luminous magic binding the tall black heaps of woodland. Now, he is no longer tempted by the sheer joy of flying that sent one pilot on a roundabout passage . . . "Because it was such a swell night" . . . and had everyone worried when his plane was overdue. With the vanishing of the brief lure of Indian Summer, the pilots settle down to the rigors of winter

flying. They must be careful now in pushing through storms, for there is a greater possibility of fog beneath them. The ice condition begins to appear at the higher altitudes. It is not possible to come safely down out of the clouds where low ceilings prevail at night, unless this is done over a lighted area. Care and more care must be exercised. The Weather Bureau, always vital, becomes of paramount importance. The charts upon the walls are the pilots' safeguards. Outside, a sullen sky broods low upon the barren ridge of the Wachung Mountains. The air is bitter, and the thermometer hangs near freezing. Bad weather. Drifts of rain sweep down over the sodden field. The pilot, taking the night mail out, comes from the pilots' room, bundled in heavy winter flying rig. Over his arm his parachute dangles, a flat square cushion holding the carefully-packed 'chute, and a system of straps that go over his shoulders and about his legs. He pauses and studies the large chart. Its various columns tell him the Sky and Weather, Ceiling (in hundreds of feet), Visibility (in miles), Wind (in miles per hour), Temperature, Dew Point and Barometer reading. At Bellefonte, perhaps, the ceiling is only three hundred feet, and a strong wind blowing across the narrow field. Better go right through to Cleveland, unless there is a change. This is the last report he will see before he leaves and has just been posted. He reads it through carefully, remembering what is important.

On another chart is the condition of the ground at each emergency field. These charts are posted every twenty-four hours and are noted as Good, Fair, Soft in spots, Soft, Soft and Rough or, perhaps, some special notation as, West side fair, East soft. In his memory is an accurate picture of all the emergency fields between

LOADING THE WEST BOUND MAIL PLANE AT HADLEY FIELD

Hadley Field and Cleveland. He visualizes, without effort, the appearance of each one.

At a large table a dark, lean-faced man is working upon a huge printed map of the United States. It is similar to the one issued daily by the Weather Bureau at Washington. Before him are long strips of tape from the teletype machine. He glances at one section where there is an apparently meaningless sentence of unrelated words. But he translates it without a pause. It is a code report from a town in Indiana, perhaps, and it gives him the direction and velocity of the wind, barometer reading, temperature and amount of rainfall at that point.

He writes these beside the town indicated. These reports come in from two hundred different places between Florida and Colorado. They begin about half-past seven and are completed by eight o'clock. The strips of tape emerge continuously from the machine. On the map the weather-man draws a little arrow at each reported spot showing the wind direction. When the reports are all in he begins to draw lines through all points having the same barometer reading. Rough circles in blue pencil appear, growing gradually smaller as he approaches the centers of low and high pressure. There is a low center developing along the Canadian border. It is moving southeast, the winds increasing in velocity, the temperature and barometer falling. A severe snow-storm. A day later it may be shrieking above the Alleghenies, a menace to the air mail.

The pilot chats with the chief of the bureau. He is the pilots' counselor, a needed and trusted friend.

"You probably will be all right when you reach Ohio," he says.

"That's a long way off," answers the pilot grinning.

He takes a last look at the map and steps out of the warm comfortable little room, through the door of the Field Manager's office into the dim, chill hangar. On the concrete apron the motor of his plane is being warmed up. Its roar drowns the shrill voice of the wind ripping the dead grass on the bare field. He slings the parachute over his shoulders and fastens the straps. On the left side of his chest, where it can be grasped quickly and easily is the ring—no longer a ring but a large metal handle that can be found swiftly when the emergency arises. Over his right hip, fastened to the parachute harness, is a service revolver, for the postman of the skies must be able to protect his valuable cargo if necessary.

He clambers into the deep cockpit. The mechanics stand shivering in the cold night. The sound of the motor sets the darkness to shuddering. The propeller, revolving fourteen hundred times a minute shrieks in a banshee voice, high and shrill, tearing at your eardrums. The plane is released. It lurches forward over the hard earth, turns into the wind, rises and heads westward. Almost instantly its lights are hidden in the murk, but the sound of the motor is borne back upon the gale for a long time after the plane has vanished.

In the room of the Weather Bureau, the man in charge lights his pipe and begins to reminisce, filling the time until midnight when a small gas balloon is sent aloft to enable them to secure the velocity and direction of the wind.

"Oh, no, this isn't so bad. I've seen days here when the boys would come in so exhausted from the cold and storm we had to fairly lift them out of their planes. He'll probably get through

tonight without much trouble. I wouldn't guarantee tomorrow night, though.

" That's the worst of this weather business. You spend twenty-five years watching and studying and working and then you're just at the beginning. At that we don't do so badly. We hit it right about eighty-five per cent. of the time. . . .

" Fog is the worst thing we have here. There are times during the late winter and early spring when for two or three days we can't turn a wheel. Ships don't go out, now, when the weather is unfit. The old slogan of ' fly or resign ' that sent so many pilots to early graves is a thing of the past. Who would think of sending a plane up on days when no liner in New York harbor can move? No one with any sense.

" The radio has been an enormous help. The pilot gets his regular reports of weather ahead while he's flying. Any unusual local change is instantly sent to him. We've guided some of the boys down to a safe landing here, when there was a fog almost to the ground, by radio instructions, and it's getting better all the time.

" The balloons we send up? Oh, they're about three feet in diameter. Filled with hydrogen gas. We send them up here at noon and midnight. At Newark they go aloft at 6 A. M. and 6 P. M., so we have four reports every twenty-four hours.

" We can get the ceiling by timing the balloon from when it leaves the ground until it enters the clouds. It rises about five hundred and fifty feet a minute. An observation is taken every minute and by means of an instrument called a theodolite we get the velocity of the wind measured by the angle the balloon makes away from the vertical. It's very accurate; within a mile an hour

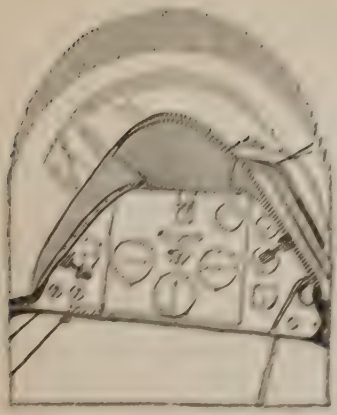
of what the wind is blowing. The direction of the wind is gotten by measuring the azinmuth angle, that is the angle made on a horizontal circle, as in navigating. It isn't easy to explain. We get the direction within a tenth of a degree."

He filled his pipe slowly.

"It will be cold up there tonight. Some snow, possibly as he gets west of the mountains."

He glanced around the warm, cheerful office.

"I guess I'd just as soon be sitting here."



IV

THE PLANES

I

TWO types of airplanes are in use regularly over the Hadley–Cleveland route, Boeing 95's and Douglas. Both are biplanes; the Boeings are powered with Wasp "Hornet" radial air-cooled motors; the engines in the Douglas ships are the old reliable Liberty 400's. Each type of plane has its particular merits and individual habits. The Boeings are somewhat faster and although only in use about a year have a high record of performance. The Douglas were among the first planes purchased from a private builder after the Government turned the air mail over to private operators. Behind them is a distinguished list of achievements both in military and civil flying. The Army round-the-World fliers used Douglas planes and the air mail pilots, when faced with bad weather are liable to request a Douglas to carry them through. They will spin, and spin flat, in the hands of an inexperienced pilot, or if caught suddenly in ice. Then the best pilot in the world is helpless, and there is nothing to do but

take to a 'chute—if there is time. They are sturdy looking ships, silver from radiator to tail, with a high blunt nose that rises like the amputated throat of some prehistoric monster, and they carry a smaller load of mail than the blue-hulled Boeings. These latter ships with their forty-eight foot wing spread and cylindrical fuselages, silver wings and tail, look trim, swift and efficient. Their double mail compartments hold sixteen hundred pounds of mail and express, and they hurtle through the skies at a comfortable two miles a minute. All ships are equipped with red and green running lights set in stream-lined receptacles on the top of the lower wing; a white light on the vertical stabilizer above the tail, and two powerful landing lights below the lower wing set in adjustable sockets. Behind the pilot's cockpit a slender mast, five feet long rises from the center of the fuselage and carries the radio aerial. The radio is in a small compartment in the left side of the fuselage just aft of the pilot's seat. The top of the upper wing on all planes is painted bright yellow so it can be easily seen from the air in case of a forced landing.

The most interesting part of the plane is the pilot's cockpit. He must climb up two steps set in the fuselage to get in. The metal seat is adjustable, and can be raised or lowered by means of a small lever at the front edge. His parachute pack forms the cushion. The rim of the fuselage and windshield rise well above his head in front, but pilots do not look straight ahead; they glance over the cockpit rim to right or left.

The handle of the control stick is the most prominent object in the cockpit. It comes up between the pilot's knees and has a hard leather, shaped grip and a button which operates the lights on the

instrument board. The stick controls the movements of ailerons and elevators, or flippers, maintain the lateral balance of the plane, and its ascent or descent. The rudder stirrups are forward and these turn the plane to right or left. On the right hand side of the seat is a wheel about eight inches in diameter. This is used to adjust the tail stabilizer while in flight to correct any change in balance of the plane due to heavier or lighter loads. Directly above it is a hand fire extinguisher, and a small foot pedal, which, when pushed in, floods the engine compartment with pyrene in case of fire. On the right side of the cockpit are the controls and adjustments for the radio, the parachute flare control. (Each plane carries two flares which can be released. They light automatically and, suspended by small parachutes, burn for three or four minutes.)

The right side of the dash—not the instrument board—contains, at the top, the ice-warning indicator, fuel pressure gauge, oil pressure gauge, water temperature gauge, inclinometer, generator ammeter, engine ignition switches, and generator cut-out switch. The left side has an eight day clock at the top and underneath the motive control for artificial horizon, radiator shutter control, and master gas supply control. On the side of the cockpit is the spark control, gas throttle, main gas supply control, gas mixture control, gas pressure hand pump, carburetor drain cock, and, alongside the pilot's seat, map case and log book.

In the center of the dash, below the instrument board, are the rheostats for dash and compass lights, by which the pilot may dim or brighten the lights shining on the instruments, and the switches for the 200,000 candle-power landing lights. Next comes the

radio beacon code chart and controls for the heater. There are two sets of brakes, for stopping the plane after it has landed, one operated in conjunction with the rudder bar, and the other is a hand emergency brake lever. Brakes are necessary on these large heavily loaded planes for they must land at a speed of sixty-five miles an hour and will roll a long distance if not checked.

These controls are all essential to flying the plane, but the most important part of the cockpit is the instrument board. This is directly before the pilot's eyes. Its arrangement is the result of much study, research and experiment. Compactness is necessary, and the latest boards have the instruments so grouped that they take up scarcely more space than the width of two hands.

The instruments must be read quickly and there must be no possibility of confusion or mistake, even under the most desperate condition.

The most important instrument is the turn indicator and this is placed in the center of the board. It does not give the actual direction, but merely indicates that the nose of the plane is swinging to left or right regardless of the position of the plane in relation to the earth. From this instrument the pilot learns that he is turning away from the course he wants to maintain and corrects it by moving the rudder in the appropriate direction. That is, if the turn indicator shows the plane swinging to the left, he uses right rudder and brings the nose back to the right.

The bank indicator is used in conjunction with the turn indicator and is placed directly above. It consists of a steel ball in a liquid-filled steel tube and indicates the slipping or skidding, or change in lateral position of the plane. This is corrected by use

of the ailerons in the following manner. If the position of the ball shows the plane tilted toward the left, the left wing then being lower than the right—the pilot moves the control stick to the right and the pressure of air on the altered position of the ailerons brings the plane back to balance.

The rate-of-climb indicator is next in importance and is to the right, and as close as possible, to the turn indicator. It shows that the plane is pointing up or down. The pilot corrects this by moving the control stick back or forward.

It is a very sensitive pressure gauge and records changes in barometric pressure; that is the density of the air. This instrument does not indicate the position of the plane in relation to the ground, but merely that it is going *up* or *down.* The plane may be falling nose first, tail first, or flat, but the rate of climb indicator merely shows that it is *falling.*

The air speed indicator tells the *position* of the plane and is placed below the turn indicator. It is also a pressure gauge and registers the difference between still air and the speed of the air rushing past the plane. The dial indicates this difference in speed in miles per hour. A sudden increase in air speed means the ship is diving; a decrease shows that it is climbing. This instrument is used in conjunction with the rate-of-climb indicator.

The altimeter—placed to the left of the turn indicator—is a barometer graduated in hundreds of feet and registers the height of the plane above a given point. It does not always show the *actual* distance the ship is from the earth for it must be set, and all readings calculated from that adjustment. For instance if the barometer is set at sea-level, then as long as the plane is flying

above country that is approximately at sea-level the altimeter reading will show the actual number of feet between the plane and the ground. But if the pilot is flying at three thousand feet altitude above sea-level and comes to a mountain range that is two thousand feet high, the altimeter will still read three thousand, but the plane will be *actually* only one thousand feet from the ground. Altimeters are also susceptible to changes in barometric pressure and the pilot must be informed of any sudden fluctuation and make the correction or his altimeter will not register correctly.

The compass is directly above the bank indicator. It is the oldest instrument in the group, in point of usage, but is still not all that could be desired. The earth inductor compass, hailed as a more accurate instrument does not always give complete satisfaction.

When the ship is in normal flight the pointers of the instruments form a cross, centered on the turn indicator. Any change is immediately brought to the attention of the pilot.

These forty or more dials, levers, switches and handles form the apparently complicated, but really compact and efficient control room from which the air mail pilot guides his ship. The board is lighted by two dash lights and each instrument has its own light shining softly up across the face. It is very easy for a pilot to become blinded, when flying at night, by any sudden sharp glare. He must keep the focus of his eyes so adjusted, that he may look from the dim space in which he is flying to the instruments and back into the night, without any momentary obscuring of his vision due to the necessity of his eyes making a decided change of focus. The whole dash and interior of the cockpit is sprayed with a dull

black paint so there will be no glitter to distract him. The rheostat controls on the dash enable him to dim or brighten the lights on the instruments until they have just the right power, or he may shut them off entirely and by means of the button on the handle of the stick flash the lights momentarily, read the instruments, and return to his study of conditions in the world of cloud, stars and infinite space in which he lives.

II

Other mail routes, of course, use other types and makes of plane, although the Boeing 95's are flown almost exclusively between Chicago and San Francisco. Fokker monoplanes are being used in the West, Pitcairn Mailwings fly between Atlanta and Newark, Sikorsky amphibians carry the mails over the new West Indies route to South America, Stearman biplanes fly through the South, Ford Tri-motors are being put into use on new routes and experiments are being conducted with a Curtiss mail plane that will carry two thousand pounds of mail at 122 miles an hour, while the new Boeing low-winged monoplane will have capacity for an equal amount and a cruising speed of twenty miles an hour more. Soon the thirty-three hours now taken for transcontinental mail may be cut to a day, and letters mailed in the evening at New York will arrive twenty-four hours later at the Golden Gate.

III

Of vital importance to the transporting of the mails and the safety of the pilots, are the regular inspections, maintenance and

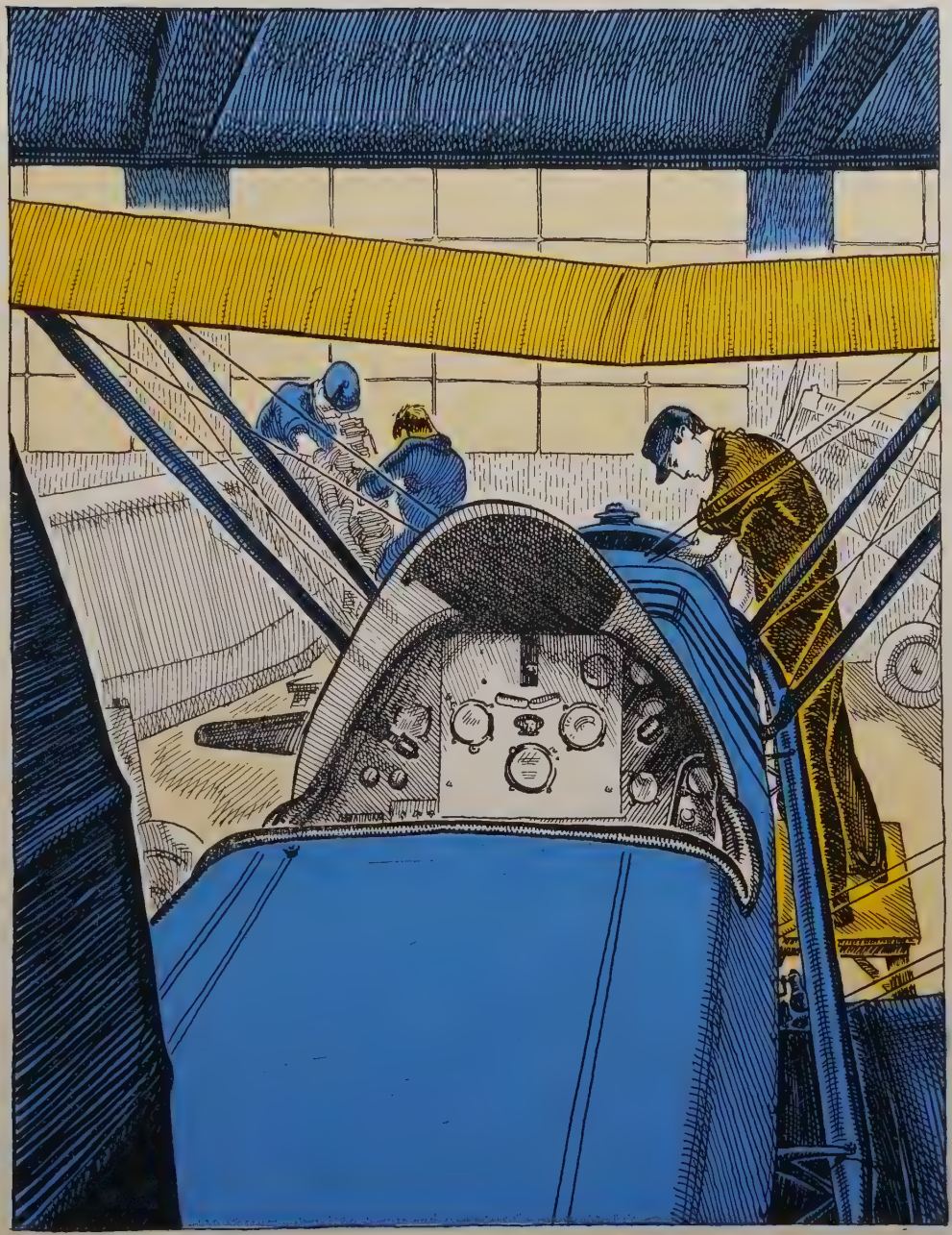
overhaul on planes and motors. The system in use is, in a general way, similar on all air lines, either passenger or mail. It is based on the rules and regulations originated in the military air service and is enforced with army strictness. The maintenance of planes in the air mail demands the closest attention and care; a personnel skillful, responsible and of the highest integrity in workmanship.

In the air mail the pilot comes first; his welfare, safety and comfort is the object of everyone from the President of the company down to the lowliest grease-monkey. The pilots know, and appreciate this; it gives them additional confidence in their dangerous occupation.

Standing beside a great silver-winged Douglas, one of them said: " Everything we suggest is given the closest attention. No money or time or labor is begrudged to get the best planes, to keep them in perfect order, to experiment with equipment and improvements. Everybody works for our comfort. Right now this company is spending thousands of dollars in testing a new ship, that they think will be a better one than those in use. It may prove untrue, but that doesn't concern them. It may be *better,* and the way to find out is costly. It gives you a good feeling to know they are backing you to the limit."

The department which cares for the mail planes has a slogan: " There are only two kinds of planes, first class and bad," and work on the principle that, " Every little adjustment, every bolt and nut, every piece of fabric, every valve, valve spring, every bearing, every turn-buckle on an airplane must be exactly right before a scheduled trip is undertaken."

To maintain this rigid standard the regular inspection at the



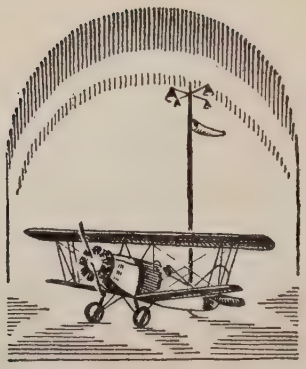
PLANES ARE INSPECTED AND SERVICED AT THE END OF EACH FLIGHT

end of each flight is as thorough as a system of checking can make it. The pilot's report notes anything which has come to his attention during the trip. The Chief Mechanic then makes his own inspection and notes all points on an inspection card which is attached to the plane. Every item on this card is checked by the mechanics, initialed as O. K., and then gone over by the Chief Mechanic for his O. K. before the plane is released.

At the end of each one thousand flying hours, the plane is taken to the main repair shop and is completely dismantled. Even the fabric is stripped from the wings and each strut, longeron, wire, bolt and nut is gone over, changed if necessary, adjusted and passed upon by the Chief Mechanic.

The engines are inspected carefully at the end of each flight. Then at the end of a specified time, varying slightly with the type of motor, but, usually, between two hundred and three hundred flying hours, the motor is torn down, all parts rigidly inspected, and necessary repairs made. The motor is then reassembled and given a block test run of several hours before being replaced in the plane.

That this strictness is worth while has long been proven. The decrease in forced landings, in mechanical failures, in fatalities, the increase in efficient performance, in schedules maintained, mail carried and miles flown, year by year since the air mail began is astounding, and much of it is due to the system of inspection and the creating of a ground personnel of the highest calibre.



V

THE MAIL FLIES WEST

I

THE sun vanished behind the blue scalloped line of the Wachung and the hot day was blown away by a cool evening wind sweeping in from the distant sea. There was a lull in the activity of the airport. The mechanics and a stray commercial flier or two walked over to the Pilots' Inn for a sandwich and coffee, or pork and beans, or ham and eggs, according to his individual appetite. The talk was of flying. They were all interested in glider experiments.

" They washed-out the one over at Red Bank," said the commercial pilot. " Somebody cracked it up twice. They rebuilt it, but the third time didn't leave enough to work on."

" Did anybody ever try to loop one? " asked a mechanic.

" Sure. Some guy out west did four loops."

" It's a funny sensation, flying them," said the pilot. " I flew that one over at Red Bank."

" Oh, are *you* the fellow that washed it out? "

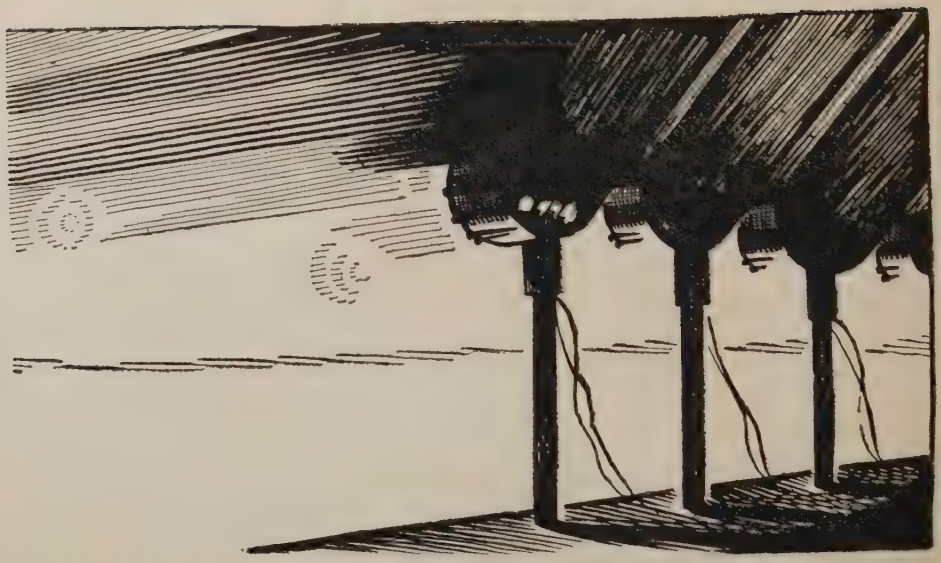
"Not me, sonny. When I set it down it was just as good as when I took it up. And, boy, when that elastic rope snaps, it shoots you off the ground like a stone out of a sling-shot. The thing that got me though, was not having any engine noise. There you are, maybe two hundred feet up, floating along pretty, and you can talk down to the people on the ground and they talk back up to you. It's queer, all right. But it's good sport."

"Well, I'd like to try one."

"There's going to be a lot of it done."

The night had come when they returned to the field and the field itself had taken on a new significance. The difficulties of night flying began to assume their full import, and one thought of the pilots of the air mail who experimented ten years before with inadequate lighting systems on fields and ships, or none at all. Along the far edges of the six hundred acres of Hadley Field the regularly spaced boundary lights marked the limits of landing. On the farmhouse, the barns, the silo and trees, were brilliant red lights, warning the pilot of obstructions; the wireless masts and telegraph poles bore their crimson tips of danger while a large searchlight with two lenses, one white, one red, revolved slowly. It was the field beacon and could be seen many miles away by the incoming pilot. Over the front and rear of the hangar, inverted lights outlined the building against the darkness, and another cluster sprayed the long funnel of the wind cone, so that no matter in what direction it swung it shone luminous and distinct to show the pilot the way the wind was blowing.

In the field post-office, four clerks were sorting the mail that was to go west. Half-way along the field stood the square frame tower



BANK OF FLOOD-LIGHTS

holding the great eleven million candlepower flood-light, which turns the surface of the field into a glowing daylight for the planes to land and take off.

Lighting equipment varies from field to field in detail, but the fundamentals are the same. Every main port of the air mail has its system of flood-lights, white boundary lights, revolving guiding beacon, red obstruction lights on all trees, buildings and points of danger, illuminated wind cone or a luminous T-shaped wind-marker that points the direction of the wind and soft shielded lights on hangars and buildings. The flood-lights are sometimes arranged in banks of lesser individual candlepower, or a single huge lense, but their object is the same, to send a glowing stream across the field about waist-high so there is no danger of it shining up and blinding the pilot as he comes in for a landing. Continuous

experiment goes on to improve the systems in use and the Air Mail companies and the Electrical Corporations are always intent upon bettering present devices.

Now the pilot of the "shuttle-plane" comes in and goes to the pilots' room to get ready for his regular evening flight to the Newark airport to pick up the late New York mail. The night is still warm and he puts on only a leather wind-breaker, winds a white silk scarf about his throat, and takes down his parachute from the row hanging upon the wall.

In the hangar the Chief Mechanic calls: "Time to get the 'scuttle' warmed up."

The "shuttle-plane" has several nicknames. It is dubbed the "scuttle" or the "puddle-jumper," and hops the short distance from Hadley to Newark and return before the mail planes start west. It is also the training-ship for pilots. When a new pilot joins the air mail he is given the shuttle to fly for two weeks or a month. Afterward he flies the regular mail route during the day and in good weather. When he has become thoroughly familiar with its characteristics, he takes out the night mail, but only when the weather is clear. Eventually he is given his regular turn, and is a full-fledged pilot.

The Chief Mechanic and an assistant go over to the shuttle-plane, standing near the hangar. It is a blue Stearman biplane with a pointed nose jutting out beyond the propeller. The fuselage looks like a very plump shark, strangely accoutered with wings. Although half the size of the large planes, it is a trim, efficient little craft and carries four or five hundred pounds of mail. The Wright "Whirlwind" motor rumbles into life. Presently

Pilot Hurley, a tall, husky lad, climbs into the cockpit and blinks the landing lights.

This is a signal to turn on the flood-light. Instantly a shimmering wave of pallid light unrolls like a magical current of impalpable water across the field. It is mysterious, theatrical, an eerie, spectacular phenomenon; a curious flowing of brilliant moonlight, as though that distant dead world had released, in some strange manner, a glowing band of frosty light upon the black, firm earth. Into this spectral current the little blue Stearman dives, and immediately is lacquered from wing-tip to tail with the phosphorescent illumination. The propeller becomes a glittering wheel of fire. Luminous auras flicker across the plane and the tongue of flame at the tip of the exhaust pipe vanishes in the greater radiance.

The ship is off the ground almost instantly. The flood-light is turned off. The weight of darkness, suspended a few feet above the ground, sinks back. Rising into the star-lit night, the white tail-light of the shuttle seems merely another star, torn loose from its celestial moorings and spinning away into the distance.

A little later the first of the westbound mail planes is attached to the tractor and dragged out of the hangar. The mail bags are trundled over from the field post-office and the laborious process of loading begun. Bag by bag the fourteen hundred pounds of mail are passed up and stowed in the forward compartments. Then the plane is moved over and the chain run from the tail to the mooring, set in concrete.

Beyond the wire screen of the fence the crowd that comes on clear nights to watch the mail planes depart, is beginning to collect.

The field-manager says:

" The Washington ship ought to be in shortly."

At Hadley the plane brings mail from the south—in relays starting at Atlanta, Georgia,—lands and transfers mail to be sent west.

The wind has fallen and the night is clear and warm. A thin green glow still lingers in the western sky, last remnant of the spring twilight, and it is just possible to discern the mountains, humped along the horizon. Somewhere in the cars parked along the road, a ukulele is being played and voices singing, drift across the field. The chief of the Weather Bureau strolls out for a cigar. He is a little, plump kindly man with a pleasant voice and a quick smile.

" Well, well," he says, " the boys will have a nice night."

" The air feels a little like rain."

" Not before tomorrow. There's some ground fog about but we always have that at this time of year."

" Who goes out, tonight? "

" ' Dutch ' Underhill and ' Hy ' Little. ' Dutch ' is taking the nine thirty-five mail. Standard time, that is. All the mail flies on standard time."

He puffs on his cigar and cocks his head to one side.

" Here comes the Washington plane."

Two spots glow in the southern sky; the landing lights signaling for the flood-lights. They shine, mysteriously large and pale yellow in the upper dark.

" He's several miles away, still. Sometimes the landing lights can be seen for ten or twelve miles."

The faint throb of the motor increases to a steady droning,

THE SOUTHERN MAIL PLANE TAKES OFF

changes to a harsh roaring as the ship, invisible, sweeps across the field and turns into the wind for a landing.

Again the flood-light covers the earth with its ghastly cold sheen. The howl of the motor dies away in a sputter of irregular explosions and into the radiance the plane slides unexpectedly, a specter from the barren spaces of the heavens, and taxies over to the field post-office.

"That's Shaffer, I think," says the weather-man walking toward the plane.

The propeller is still ticking over, the motor pulsing in a deep, slow mutter, hollow in the exhaust pipe. Men are taking the mail pouches from the compartment. The pilot stays in his cockpit, turning his lean face into the glow of light from the open door of the post-office and talking to one of the clerks.

"Yes, that's Shaffer, all right," says the weather-man. "See

that queer looking bird he has painted on the tail of his ship? That's his emblem."

On the yellow vertical fin is a strange bird, painted in black. The plane is a Pitcairn "Mailwing," small and fast. It carries only six hundred pounds of mail but the southern route does not have the volume of letters transported over the transcontinental.

In five minutes the flood-lights go on, Pilot Shaffer gives his ship the gun. A cloud of reddish dust whirls back, and he is gone, to complete his run at the Newark Airport.

Scarcely has the sound of his motor vanished than the lights are turned on again, and the shuttle lands swiftly, swinging up to the big blue Boeing to transfer the last of the mail.

Pilot Hurley goes to change from his flying togs. The offices are filled with activity. In the Weather Bureau room, a tall, dark-mustached man is completing the weather map from the last reports just off the teletype machine. Blue lines of barometric readings spread from the high and low centers of pressure. Tiny arrows show the direction of the winds. There is a "low" beyond Chicago, moving eastward, with rain and local storms.

"Look at this," he says pointing to the southern Atlantic states. "Not a wind above seven miles an hour clear from Atlanta to Washington."

The pilot of the shuttle-plane comes in and leans on the rail talking to the weather-man.

"Thick ground fog over Newark," he says. "I had to stay above a thousand. It's in spots. No trouble to get down through it, but there were places where the visibility was only about three-quarters of a mile."

"Long Island reports less than a half mile," answers the weather-man.

"It doesn't come this far south. Was that Shaffer I passed coming in?"

"Yes."

"I put my landing lights on now, when I'm a mile from the field. There's too much passenger hopping going on these warm nights. Why, I almost shook hands with one of them the other night. Neither of us saw the other until we were about fifty yards apart. It burns up more juice but it's worth it."

Pilot Underhill came in to get ready for his flight, a small man with a bristle of light hair, a thin determined face, and a body as hard and wiry as a light-weight boxer.

Outside the stillness was shattered by the sudden roar of the engine on the first plane. It had sounded loud by day, but in the night quiet it seemed to rock the universe. It penetrated the hangar and set the air vibrating in the offices.

Presently Underhill entered the Weather Bureau office wearing light flying togs and carrying his parachute and helmet.

"Nice night," he said. "What time is it?"

"Nine-thirty."

"I'll be on my way."

No need to bother with weather charts tonight. No fog, no storms in sight, only a slight wind blowing partly astern that would add a mile or two of flying speed. He went out, slinging his parachute over his shoulders, buckling the straps. At the plane, he paused to don his helmet and adjust the headphone for the radio. Then he climbed up into the cockpit, that stood well above his

head and sank from view while he inspected the various dials for oil and gasoline pressure. Slowly he opened the throttle and the propeller hissed and squealed in its terrific whirling. A pale violet-colored flame blossomed at the tip of the exhaust pipe beneath the fuselage and rudder and elevators shivered in the blast of air sent back from the propeller. He shut the throttle and waved to release the plane. His landing lights cut two paths through the darkness, and were drowned by the brilliance of the flood-light. Again the motor thundered with power. The iron tail-skid struck sparks from the concrete. A wall of dust and dirt and gravel, ten feet high, arose from behind the plane and sent the crowd scampering. When the dust had settled he was a hundred feet above the ground and climbing rapidly. There was a flash of running lights as he turned and then the dwindling glint of the white tail-light, soon lost to view.

Already the second plane was being trundled out by the clanking tractor and the hatches opened to receive the heaped mail bags. "Hy" Little, the pilot, hurried over to the field-manager.

"How much time have I?" he asked.

"Half an hour."

"I've got to get a bite to eat."

He ambled over toward the Pilots' Inn, a tall square-shouldered figure wearing a trench-coat and a soft hat.

"Get the mail aboard, boys."

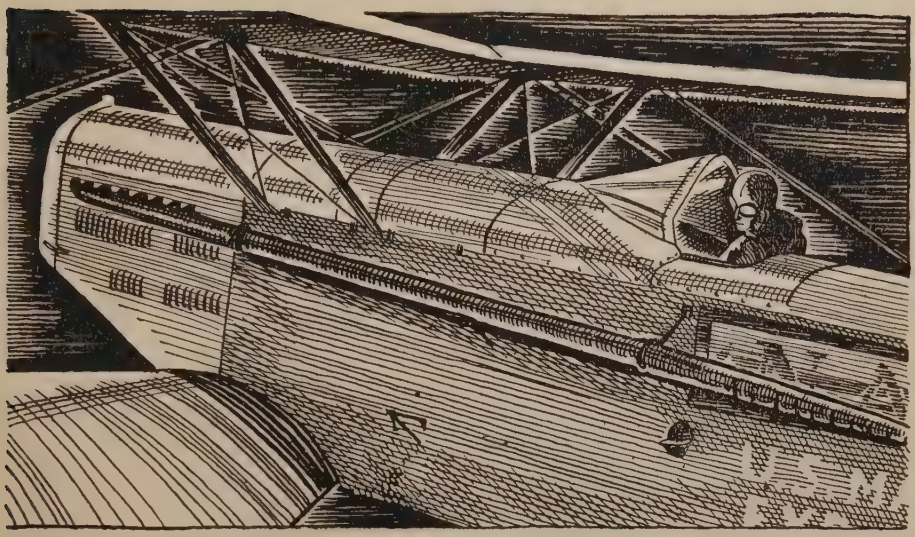
At ten o'clock Pilot Little got into the cockpit of Boeing Mail-Plane Number 67. He took off with a roar, literally hurling the big ship up from the dazzling level of the field into the dark sky. He banked at the lower edge of the field, came shooting back,

pulled up sharply and swung away westward in pursuit of his partner.

With the departure of the second plane, the field seemed to relax, sigh with relief from the tension, and sink back contentedly into the warm night. There was time to stand outside the hangar and smoke idly, watching the star-clustered sky, the spreading dim countryside, with the ruddy squares of lighted windows shining in the vague walls of distant houses. In the hangar, the electric drill began its hum, but it seemed a long way off and of no importance. The mail had gone.

In imagination those left at the field followed the swift flight of those two mechanical birds. Heard, but unseen, they were passing over the sleep-bound hamlets and farms, above the stolid black mounds of darkened houses. A thousand feet above the earth they were speeding toward the mountains, climbing steadily to the three thousand foot level they would maintain until the bland farmlands of Ohio were beneath. In the small space of their cockpits, before the cluster of dimly glowing instrument dials, the two pilots, veterans of many similar voyages, were relaxed, enjoying an easy passage. There were no problems on such a night. Every beacon light, blinking its six or eight flashes a minute would be plainly visible, unless some unforeseen change of temperature brought fog over the mountains. Their pathway was a string of twinkling jewels strung over the black waves of the mountains. They had two paths which they could follow and both led to the same destination. One was the visible path of lights and the other was the unseen pathway of dots and dashes flung from ahead by magic wand of the radio; a beacon springing into space and maintaining

THE NIGHT MAIL TAKES OFF



A THOUSAND FEET ABOVE THE EARTH

a true, undeviating course across space. Perhaps they were thinking of the new radio beacon device to be placed on the tops of the mountain peaks, casting out a distinct signal to the plane above giving him his position when fog and cloud hid the flicker of the light-beacons, or the perfection of the radio-telephone which would enable the pilot not only to receive verbal messages but to reply, to ask for information, to send instructions for locating him and his ship in case he was forced down. The Boeing lines, west of Chicago, were experimenting with it successfully, and soon it would be part of the regular equipment of all mail planes.

What was that? Bellefonte. No use to stop on a night like this. Blink the landing lights in signal. A light on the dark field signaled in reply. Half the journey over.

Suddenly in the empty dark ahead two colored points of light appeared. The eastbound mail plane. The pilots signaled in passing. Making good time. Get an extra hour of sleep and be able to shoot a round of golf in the morning. . . . Forgotten were the desperate nights of fog and sleet and cold. It is difficult to remember past hardships when the present is pleasant. And why try to remember them? It's all part of the job. An arduous job; a dangerous one, but, taken all in all, not so bad. At least a man's job. Anyway once flying gets under your skin, it's hard to give it up. The sea lures the sailor back to its turbulent and rigorous tyranny; the sky calls to the flier with the same insistent appeal and will accept no reluctant homage. . . . Glow of light on the horizon. Pale splotch like a wan sun struggling up out of the dark. Cleveland. Lights on below. Ease down into the frosted sea. The mail's in!

Then away roars the relay plane to Chicago, where ship by ship, and pilot by pilot, the mail will be passed across the twenty-six hundred miles of plain and prairie and mountain and forest, from the spectacular towers of Manhattan to the tilted streets of San Francisco.

II

On the air mail field at San Francisco, the east-bound plane is being loaded. Pouches are stored and the compartments locked. The shrill whine of the inertia-starter is sucked into the sudden roar of the motor. The pilot climbs into the cockpit. He is lightly clad but carries heavy togs for the cold he will encounter when he

crosses the " Hump " of the Sierra Nevada at any height from eight thousand feet up to three miles, depending upon the weather. Possibly the pilot is Claire K. Vance, veteran of the air mail, who has pushed DH's and Boeings across the barrier of mountain peaks more than two thousand times in his seven years at the control stick. He settles his burly frame into a comfortable position, opens the throttle and listens to the thunder of the motor. Satisfied, he shuts down, adjusts his goggles, and signals to loose the plane. The big ship rises in a surprisingly short run. The New York mail is away.

Glancing back, San Francisco spreads out like a toy city, a fantastic city constructed with an eye to picturesque effects of streets that twist and climb and drop away again at impossible angles. The waters of the harbor are ultramarine and the white sails of yachts shine in triangular patches. A line of battle cruisers swings at anchor, with twists of smoke rising from banked fires, and the ferries going to and from Oakland look like some flat water-bugs dragging long milk-colored antennæ.

Below the rich valley-land leads gradually toward the mountains. For the first hundred miles, as far as Sacramento, the ascent is very slight, and the air mail pilot can rest easy, flying at any altitude the weather will permit.

California, land of legend and romance, passes rapidly beneath the plane. Here the " Forty-niners " struggled and sweat and fought man and nature to hew the dark quartz with its streaks of gold; or toiled in the icy mountain streams in back-breaking labor to shift the bright nuggets from the sand and silt. Here the Spaniards built their missions and educated the Indians to the knowledge of work and God. Desert and mountain and fertile

valleys, the Garden State today pours its excess of fruit over the rest of the Nation, just as seventy years ago it poured its excess of gold. Fruit and oil and gold have brought undreamed of wealth to its people. And the air mail carries east the written message of its prosperity.

Sacramento appears, and the pilot begins the long climb to hurdle the snow-covered peaks of the Sierra Nevada. From afar he can discern a blanket of cloud, apparently as solid as the rock of the mountains, choking the passes. He'll have to go over. Steadily the ship climbs into the thinning atmosphere, laboring a little now as the needle of the altimeter shows two miles and the top of the clouds still a thousand feet above. The air is bitter and the wind tumbles the pale heaps of cloud. At thirteen thousand feet the pilot is above them and flies over a strange region of moiling, intangible country. Beyond the mountains is good weather with a stiff wind kicking up under the tail, shooting the mail onward an additional twenty miles an hour. He switches on the radio and the voice of the weather man reports unlimited visibility at Reno, the end of the first relay. Behind him, as the plane descends, the white battlement of the Sierra Nevadas, " the eastern wall of the land of gold " lifts higher and higher into the heavens. Dipping toward the fertile Truckee meadows the city of Reno comes into view over the black arches of the engine rocker arms, and presently the plane banks into the wind, settles lazily, and the mail is in.

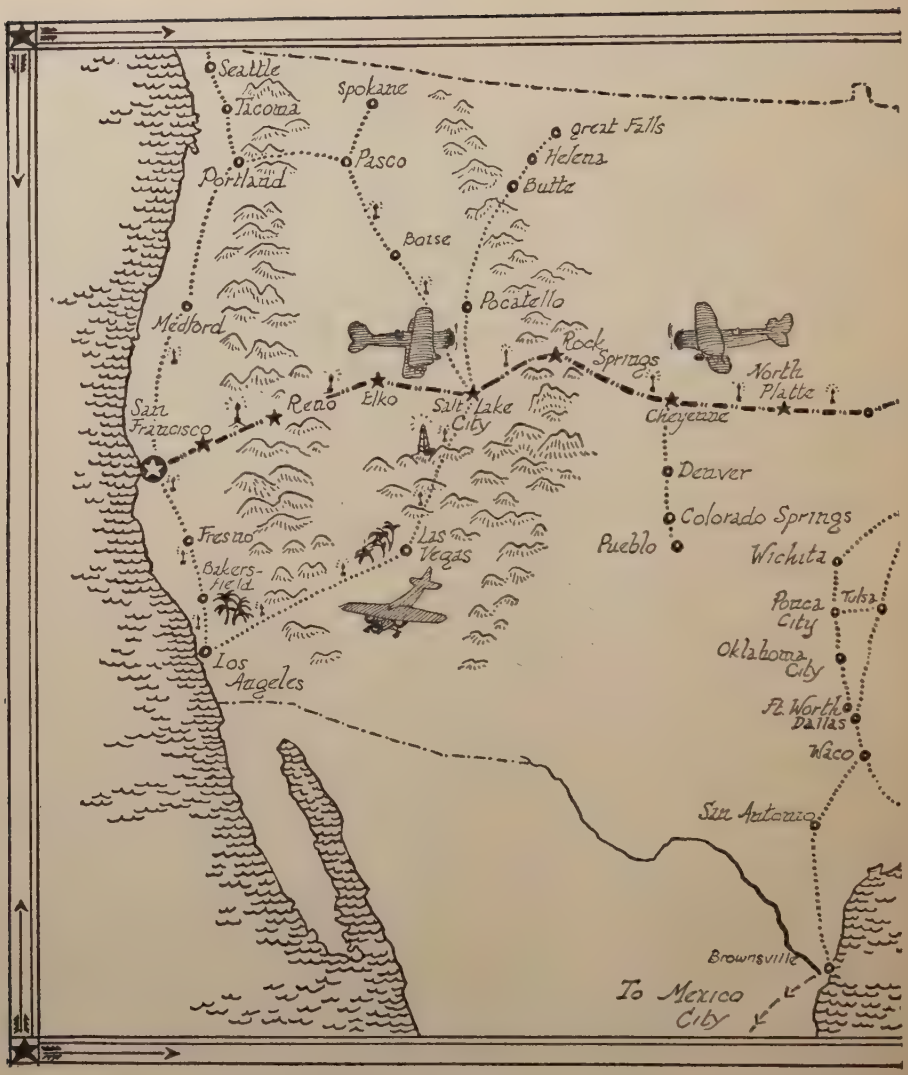
The relay plane takes off within a few minutes, heading on the next jump to Elko, Nevada, over two hundred miles away. The land below would worry any but mail pilots. It is a tumbled sea of ashen mountains, bleak, broken and inhospitable, part of the

wasted plateau lying between the Sierra Nevada and Wasatch ranges; a deserted, barren land, with ridges and peaks of dismal mountains tossed in a mad profusion. Yet, in spite of the dangers to a disabled plane, few serious accidents have occurred over this section of the transcontinental mail. The pilot must fly high, for the land itself is a mile above sea level and the ridges rise several thousand feet higher. The wind holds astern and the mail plane sweeps across the broken land. Steadily it adds to its total of air miles, swinging a little north of east, until the Elko field, a mile above the distant Pacific, slides into view and the plane glides down for a landing.

From Elko the lines of far away mountains rise in gigantic waves across the sky-line. The mail plane rides easily over them; the sky is blue with the serene clarity of clear weather at high altitudes. The swift passage east speeds the approach of night. Shadows of mountain peaks stretch incredibly long over the earth, and the ranges fade, violet and purple and lavender, back into the sunset. Now the glistening surface of the Great Salt Lake, a vast inland sea, trapped by the surrounding heights appears, with the city and the end of the run.

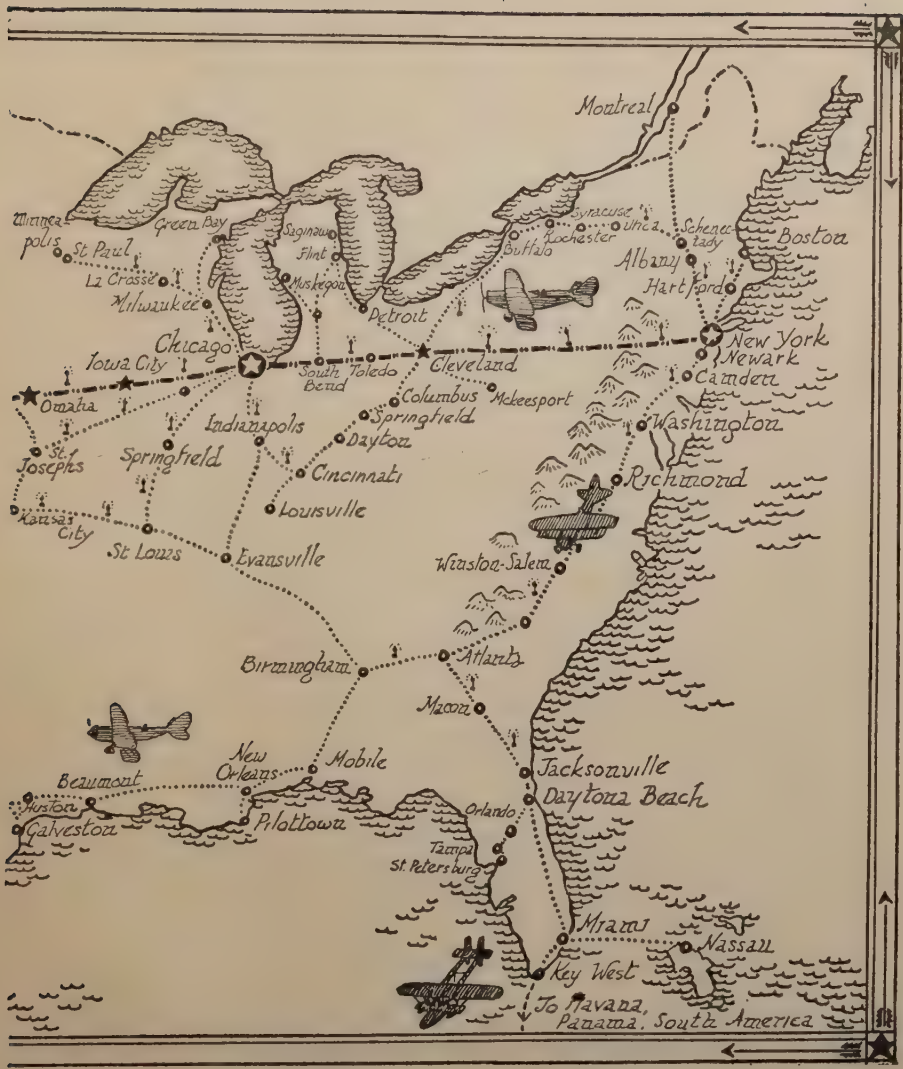
The mail is increasing. Additional pouches are taken on at Salt Lake City, where the Transcontinental connects with three other air lines: the Western Air Express, operating out of Los Angeles, across the California deserts into Utah; the Varney Line that crosses the mountainous country from Pasco, Washington; and the National Parks Airways, bringing mail from Idaho and Montana.

Now the east-bound plane, laden to capacity, must be lifted in



AIR MAIL ROUTES

DARK LINE SHOWS THE PATHWAY OF THE TRANSCONTINENTAL AIR MAIL.



IN THE UNITED STATES

LIGHTED PORTIONS, FLOWN AT NIGHT, ARE INDICATED BY SMALL BEACONS.

a short distance over the ten thousand foot barrier of the Wasatch Mountains. Two miles in the air, the pilot must maintain that altitude for over forty miles. The wind is cold, even in summer, and when the winter blizzards scream and rage across the peaks, the mail pilot's job is not one to envy. Here on Porcupine Ridge, Pilot Boonstra crashed one tempestuous December morning. The ledge where his DeHavilland piled up was nine thousand feet above sea level. Storm and snow hid the mountains, and the valleys far below were lost in the welter of the blizzard. To stay by the plane was certain death. He began the dangerous descent, wallowing in the snow-drifts, falling and rising. All day he struggled onward. Dark came and still there was no sign of habitation. Through the tortuous, snow-blocked crevices he made his way. The storm raged and buffeted his weary body. Doggedly he kept on. The endless hours of the night brought added difficulties. His strength was nearly gone by the time a faint gray streak marked the agony of another day. Presently he could no longer stand upright. Muscles, strained beyond endurance, refused to heed the stubborn urging of his will. All sense of time had passed. Nothing remained in the world but the few yards of snow and rock in which he moved. Unable to walk, he crept forward on hands and knees. Each breath was torture. The thread of his life was so short that he believed the end was only a matter of minutes. A dozen planes were hunting for him. A dozen pilots dipped and banked and cursed as they searched the canyons for some glimpse of the wreck. Help was not to come from them. He succeeded by the unflinching quality of his will. Ahead he saw the bulk of a ranch house. Crawling laboriously, he managed to reach it. . . . Pilot Harry

Boonstra still pushes the mail over the mountain ranges, but he has no affection for Porcupine Ridge.

Perhaps, as he is flying the ship, he leans out for a momentary glimpse of the spot where his plane crashed " back in the old days." No more DH's to be " hossed " over the ridges. Good crates, they were; the best of their kind, but slow compared with the planes today. The dark necklace of cylinder heads and rocker arms at the nose of the plane—the " Wasp " radial motor—looked queer at first after the Liberty engine with its double bank of exhaust pipes and the radiator with its cap like an automobile. Bridgers Butte comes into view, smooth and level, seen from ten thousand feet, where from the cottonwoods and willows the thin plumes of smoke once rose to mark the camps of the westward wandering emigrants. Now the plane parallels the bright line of the Uinta Mountains, and crosses Grangers Bench where Pilots Bishop and Ellis staged their battle against the elements. Scarred and broken and etched with the bleak winters and hot summers, the numberless gulches tear apart the already ravished lands. The rigid trail of the Union Pacific tracks comes into view, and Green River. Higher and higher the land rises. Table Mountain, where Pilot Ellis was wrecked, and Pilot Chandler made a successful forced landing in deep snow on the flat top, marks the landscape and the mail plane comes down to the field, the highest regular stop of the air mail, six thousand four hundred feet above the sea.

The day is ending as the next ship hurtles into the air for the last climb that will enable the pilot to descend gradually to Cheyenne. The western sky, rose-colored, drains into the darkening peaks of the mountains. Beyond the Rawlins emergency field,

the ship begins again to ascend for the ten thousand feet necessary to top the Laramie Mountains at Sherman Pass. The black shadows drift down into the canyons and gulches, filling the land level to the crests of the buttes and ledges. Range by range the mountains are passed. The immensity of the country, the miles of tumbled rock, fir-clad slopes, the countless lakes, shining like silver coins in the black landscape, the great pinnacles of stone colored in red and yellow and blue, shaped into towers and battlements, gnawed and corroded into a thousand fantastic forms, is revealed to the high-flying pilot. From rim to rim the world is a sea of monstrous, immovable waves. Through their crevices the trains crawl along their metal roads, rivers gather slowly from melting snows and springs, widen and flow their tortuous courses to the forgotten oceans. Minute towns take shape, hopelessly girded by the ring of mountains. Threads of roadway emphasize the enormous space.

Over all the air mail pilot rides serenely, approaching the oncoming night.

The last obstacle conquered the ship drops four thousand feet toward the dome of the Cheyenne capitol building, set among fine trees and approached by a broad highway. Where the Pony Express riders once brought the mail, the blue Boeings thunder across the sky and come to rest.

The Continental Divide is behind and from now on the way is easier. Gone are the grandeurs of Elk Mountain, Longs Peak and the Snowy Range; and with their beauty the most dangerous section of the Transcontinental Air Mail route westward from Chicago to the coast is passed.

Scarcely a pilot flying the Mountain Division has not felt the chill breath of disaster at some time in his career, and many flew their last ships over those same mountains.

In darkness the mail plane leaves Cheyenne and as the mountains fall away to the level plains of Nebraska, the ship can be brought down to normal levels. The beacons wink at their three-mile intervals, and on the emergency fields every twenty-five miles the larger lamps send their guiding rays into the night. Hidden are the prairies where the buffalo once roamed, numberless and uncounted. Above the Oregon Trail the mail plane swings. At North Platte the altitude is only a scant three thousand feet. The wide shallow mirror of the Platte River glimmers in the dark. Flood-lights turn the unseen landing field into a spectral brightness and the plane lands easily.

Omaha reached, the continent is half-spanned. Five hundred miles more to Chicago and the last link is connected. Two relays are sufficient. Dawn is breaking as the mail plane pilot discerns the dark smoke rising from the awakening city. Down he comes and the mail pouches begin their last ride. Cleveland; then the Alleghenys—and New York.

III

East, west, north and south the planes of the air mail follow their eventful or uneventful courses. New pilots come to take the places of the old guard but the tradition carries on unchanging. In the dark heavens the pilot, strapped into the body of his huge man-made bird, watches the earth below; watches the flickering needles

of his instruments, listens to the howl of the motor. Two thousand feet above the sleeping world. The deep dark lying fold on fold over the quiet earth. Nothing different from a half hundred other lights. Relaxed and comfortable, anticipating the end of the run when he will return to the commonplace round of mankind; play golf, tinker with a motor boat, go fishing, tune in on WJZ. Perhaps he is a little bored with his job. Possibly the routine irks him and the flavor of adventure seems as remote as it does to the cashier in the bank. It may be that Pilot Hal B. Freeburg was thinking in just such a fashion as he flew the mail plane from the twin cities of Minneapolis and St. Paul to Chicago on the night of July twelfth. His mind may have been occupied with casual plans of his own, but his eyes instinctively watched and noted the world below. There was a beacon light. He must be nearing Trevino in Wisconsin. The flat country sweltered in the heat of a period of unusually high temperatures. Even aloft the air seemed lifeless and stagnant. Perhaps he recalled seeing a photograph of a pilot on the Atlanta route who flew the mail wearing a bathing suit, shoes, a helmet and parachute. Nights, such as this one, a bathing suit would feel rather comfortable. He leaned over the cock-pit rim, his attention caught by the passage of a train upon the Chicago, Burlington and Quincy tracks beneath. Its fifty miles an hour seemed nothing more than crawling. The windows shone like a long luminous worm. In a few minutes he had left it miles behind. Then he saw a strange glow in the darkness. He was puzzled. What could the light be? It looked like fire. He put his ship into a dive. The black mass of the earth swelled to meet him. Suddenly he saw clearly what was happening. A bridge of the

railroad was afire. And toward it the train he had recently passed, was rushing. Adventure? He banked and sped back toward the oncoming train. The beam of the headlight swept into view. He dove toward it, leveled off at a dangerously low altitude and circled the train, flashing his landing lights. The train did not slow down, so he flew ahead and dropped a parachute flare. The brilliant glow illuminated the countryside. The engineer of the train, sensing something wrong, applied the airbrakes, and brought the train to a stop. The official report of the happening states:

" Pilot Freeburg then flew ahead and circled the bridge several times, all the while flashing his lights, attracting the train crew's attention to what was wrong. The mail pilot then picked up his course, headed for Chicago, arriving there with his mail on time.

" Freeburg made no comment on his heroic deed, other than to request new flares. It remained for the train crew to spread the news of what Freeburg had done."

IV

East, west, north and south the beacon lights of the air mail lay their flickering trails; day and night these couriers of the clouds serve our civilization on a " job " which is the most adventurous occupation of men today.

The air mail is the greatest experiment in commercial aviation that has taken place in our country and its success is a tribute to the men who brought a practical vision to its beginning; to the men who accepted the task of carrying out their plans while the air mail still operated under control of the U. S. Government; and

the men of the various private organizations who, taking over its destinies, brought to it the same high ideals of service, and maintained to the full the traditions established by their predecessors.

Now the air mail spreads its wings still further and the shadows of American planes, piloted by American fliers sweep across the sun-scorched islands of the West Indies, the emerald depths of the Caribbean, the lush solid tree tops of Brazilian jungles, the snow girt peaks of the Andes. Oh, " rolling down to Rio," go the silver tri-motor monoplanes, and into Alaskan desolation speeds a bullet-shaped bird, with a thousand pounds of mail in its body. Forty thousand miles a day the planes on the many routes fly; " pushing the mails " through wind and storm and sunny weather.

THE END

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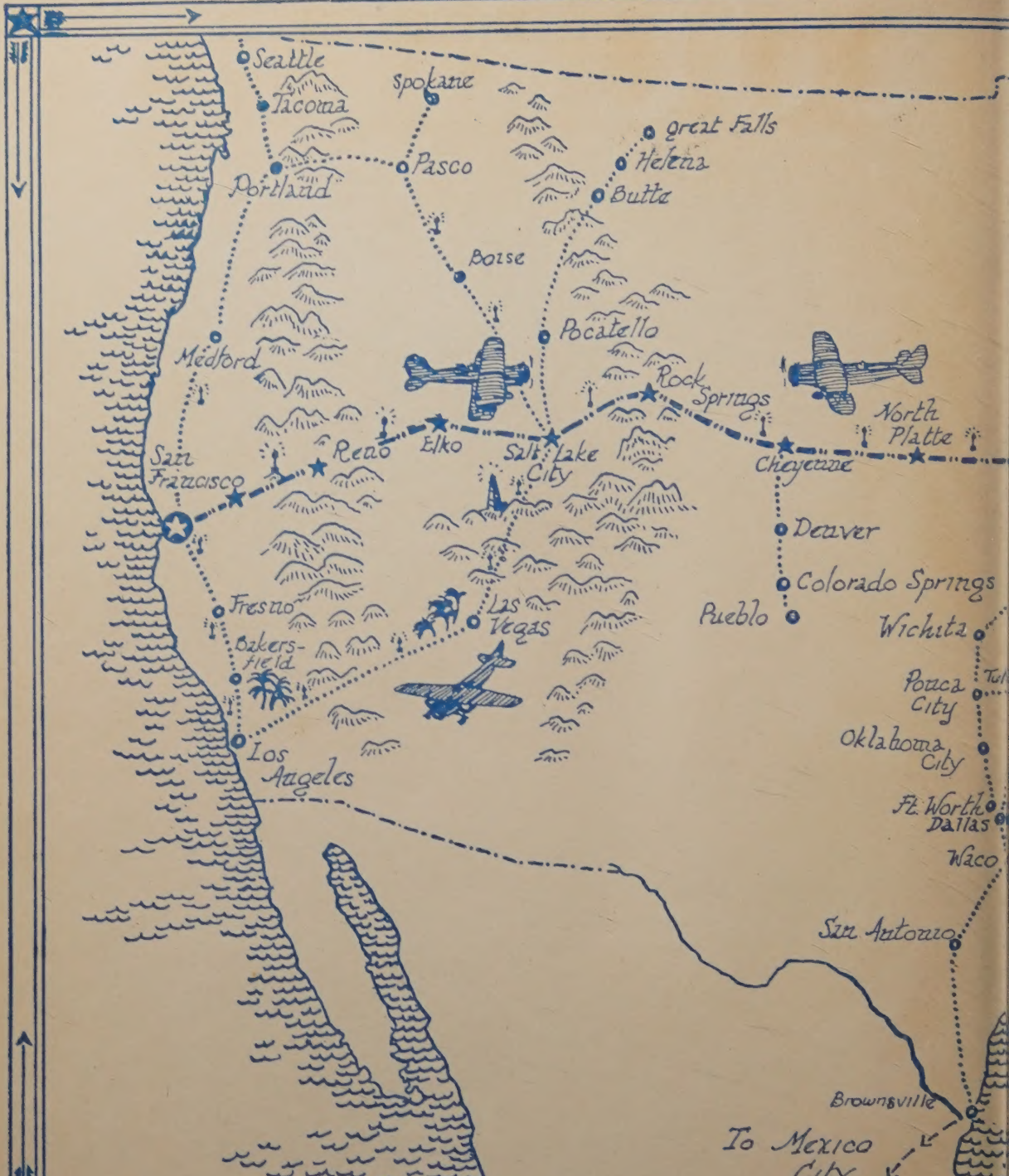

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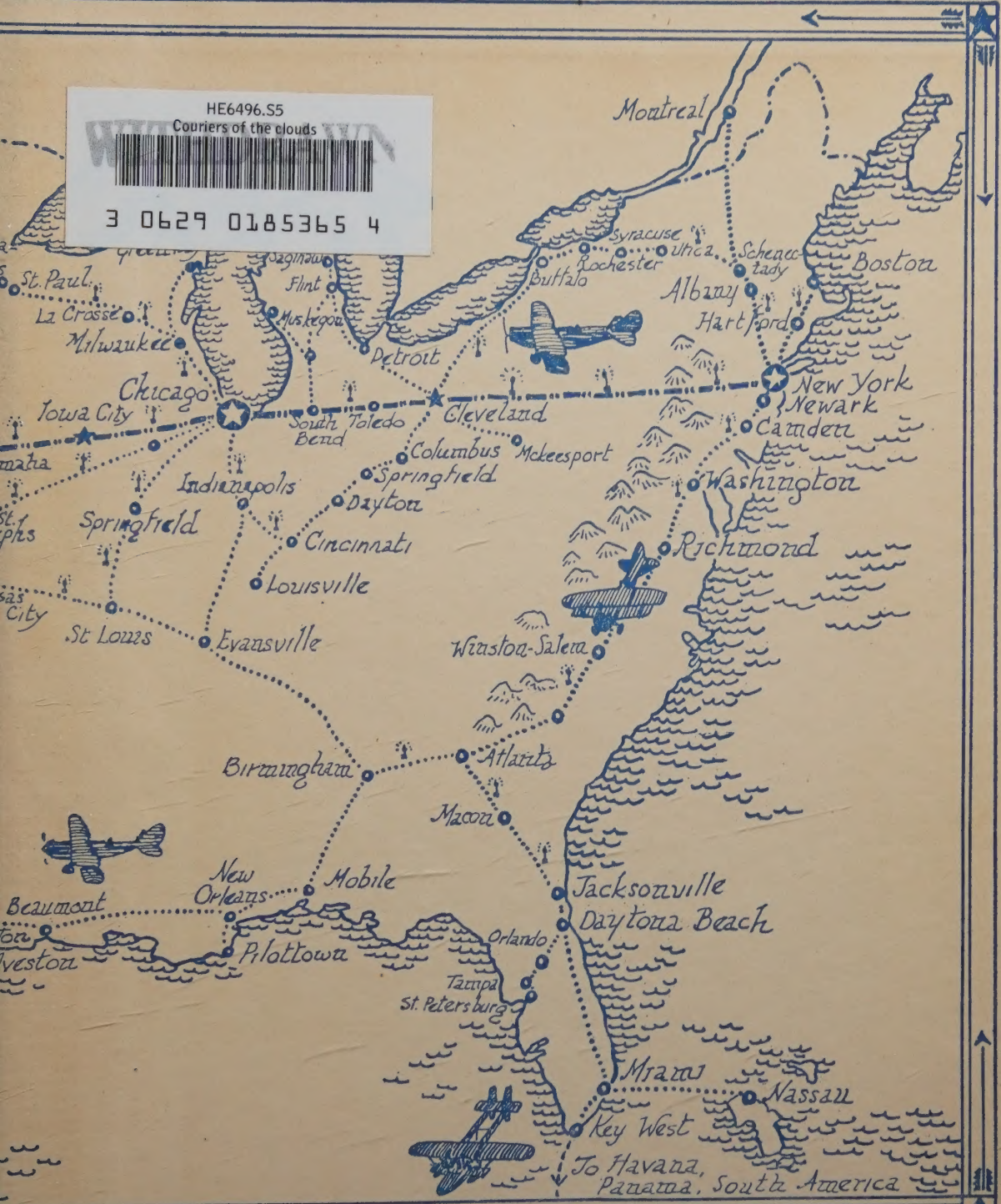

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